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21 August 1985

USSR REPORT
LIFE SCIENCES
BIOMEDICAL AND BEHAVIORAL SCIENCES

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AGROTECHNOLOGY

BRIEFS

MEMBRANE PROCESSES--The USSR Council of Ministers has adopted a decree "Measures For the Widespread Introduction of Membrane Processes To Sectors of the Agroindustrial Complex, The Medical Industry And Public Health." It is noted in the above decree that ministries and departments do not pay the required amount of attention to introducing to sectors of the public economy highly effective membrane processes, guaranteeing substantial savings in energy and material resources. Membrane processes are insufficiently used for the output of food products, for obtaining food protein from production wastes in the food industries, for reducing losses in preserving the products of plant growing, and also for the production of pharmaceutical agents with a high degree of purity as well as for the treatment of various diseases. The USSR Council of Ministers has assigned the ministries and departments quotas for 1987-1990 which call for a significant increase in production volumes for the production, preservation and processing of agricultural raw materials by using membrane processes, and also for the production of equipment for membrane processes, membranes, membrane elements and materials. For these purposes it was suggested that the ministries and departments provide for the manufacture and delivery of the required quantities of assembly parts, control and measuring instruments and automated control systems. Through the decree it is intended to implement a number of organizational measures designed for the further development of scientific-research and planning-construction studies on the development and introduction of membrane processes to sectors of the agroindustrial complex, the medical industry and public health. [Text]

[Moscow IZVESTIYA in Russian 23 Apr 85 p 3] 12262

CSO: 1840/326

BIOCHEMISTRY

UDC 577.171.4:175.859

REGULATOR PEPTIDES DERIVED FROM NONSPECIALIZED PRECURSOR PROTEINS

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 21,
No 1, Jan-Feb 85 (manuscript received 15 Sep 83) pp 62-69

YANKOVSKIY, O. Yu., Department of Biochemistry, Leningrad State University
imeni A. A. Zhdanov

[Abstract] A review of the literature is presented indicating existence, along with traditional peptide regulators, of peptide regulators which are formed from non-specialized protein-precursors. These latter regulators are products of incomplete catabolism of functionally-mature proteins. Even though most of their effects were observed in vitro, it is suggested that these in-vitro-obtained products could serve as regulators fulfilling the functions of signal generating molecules. This type of biologically-active materials--which are natural metabolites in the body--may be useful in production of new pharmacological agents. An assumption is made that one of the routes in evaluation of the system of protein-peptide bioregulators could be based on the degradation products of functionally-mature proteins. References 30: 5 Russian, 25 Western (1 by Russian authors).

[342-7813]

BIOPHYSICS

UDC 577.352.5.37:612.8.014.423

POSITIVE COOPERATIVITY IN TETRODOTOXIN BINDING TO SODIUM CHANNELS OF
RAT SPINAL GANGLIA INDUCED BY ANEMONE TOXIN RTX-III

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 282, No 2, May 85 (manu-
script received 27 Nov 84) pp 433-436

SOROKINA, Z. A., CHIZHMAKOV, I.V., KOZLOVSKAYA, E.P., VOZHYZHOVA, Ye. V. and
YELYAKOV, G.B., Institute of Physiology imeni A. A. Bogomolets, Ukrainian
SSR Academy of Sciences, Kiev; Pacific Ocean Institute of Bioorganic
Chemistry, Far Eastern Scientific Center, USSR Academy of Sciences,
Vladivostok

[Abstract] An investigation was conducted on the kinetics of binding
of tetrodotoxin (TDT) to sodium channels in the spinal ganglia of rats follow-
ing pretreatment of the latter with anemone (*Radianthus macrodactylus*) toxin
RTX-III. Analysis of Langmuir and Hill plots of the binding data showed
that pretreatment of the channels with RTX-III exerted a positive effect on
the subsequent binding of TDT. The binding constants for the first and
second TDT molecule were found to be 0.2×10^{-8} and 2×10^{-8} M, respectively,
indicating enhanced binding of the second TDT molecule. The mechanism
of the effect of RTX-III was ascribed to a slowdown in inactivation kinetics
with induction in the channel of a second binding site for TDT. This obser-
vation provides yet another proof for RTX-III-induced conformational changes
in the sodium channels. By binding to the external surface of the membrane,
RTX-III causes conformational changes in the entire macromolecule which con-
stitutes the sodium channel, affecting as it does both gating and TDT binding.
Figures 3; references 7: 3 Russian, 4 Western.

[1921-12172]

BIOTECHNOLOGY

BRIEFS

CEMA BIOTECHNOLOGY COOPERATION--In the Bulgarian People's Republic, a national council on biotechnology has been established, a complex program has been worked out for its development until 1990 and a special council has been formed within the presidium of the Bulgarian Academy of Sciences to deal with affairs in this field of science. During the current five-year period, Bulgarian scientists will work in close cooperation with colleagues from the Soviet Union and other CEMA member-countries to work on 47 projects involving biotechnology. A special organization, "Biotekhnika", has been created with headquarters in Plovdiv to introduce the results of this research in Bulgaria. [Text] [Moscow] EKONOMICHESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV in Russian No 2, 1985, p 74 [COPYRIGHT: Sovet Ekonomicheskoy Vzaimopomoshchi Sekretariat Moskva 1985] 12261

CSO: 1840/324

UDC 582.22.523.72.004.13.002.73

PHOTOSYNTHETIC PRODUCTIVITY OF VARIABLY ORIENTED LAYERS OF CHLORELLA
SUSPENSION IN NATURAL LIGHT

Ashkhabad IZVESTIYA AKADEMII NAUK TURKMENSKOY SSR: SERIYA
FIZIKO-TEKHNICHESKIKH, KHIMICHESKIKH I GEOLOGICHESKIKH NAUK in Russian No
1, Jan-Feb 85 (manuscript received 7 Jul 83) pp 96-99

[Article by A. V. Piskunova, Yu. N., Filippovskiy, Ch. A. Amanov, V.G.,
Maslennikova, N. Seytgel'dyev, Solntse Scientific-Production Association,
Turkmen SSR Academy of Sciences]

[Text] Theoretical calculations of the photosynthetic productivity of
variably oriented layers of chlorella suspension were undertaken in [3].
The present work examines the results of the experimental verification of
certain theoretical conclusions.

An apparatus has been designed (Diagram 1) which consists of four vertical
chambers illuminated from two sides and oriented along light segments (1 -
north-south, 3 - south-east, 5 - south-west--north-east, 7 - north-west
--south-east), a horizontal chamber, and a vertical cylindrical layer. The
working chamber is made of acrylic plastic. A P-shaped thin-walled
stainless steel tubular heat exchanger was built inside the chamber. A
bubbler, consisting of a thin-walled stainless steel tube with an internal
diameter of 3 mm with $\phi 1$ apertures 10 mm apart from each other, is
positioned parallel to the bottom of the chamber at a distance of 10 mm.
The dimensions of the chamber's working part are the following: width - 170
mm, height - 190 mm, thickness - 10 mm.

Each chamber is equipped with a heat stabilizing system for maintaining
the suspension temperature within the limits of $37 \pm 1^{\circ}\text{C}$, consisting of a
heat exchanger, contact thermometer (KT), automatic temperature regulator
unit (BRT), and an electromagnetic valve (EK) located on the cooling water
feed line.

In order to maintain a gas-air mixture (GVS) of identical composition, a common receiver 2' was used in the chambers into which air was injected by a compressor 1' through a RC-3 type rotameter (see Diagram 1). CO₂ was also supplied to the receiver from carbon dioxide cylinder 3' through reducer 4' and a RM-A type rotameter. Air (V) and CO₂ flow rate was regulated by the rotameters. The gas-air mixture produced in the receiver was fed into the bubblers of the working chambers.

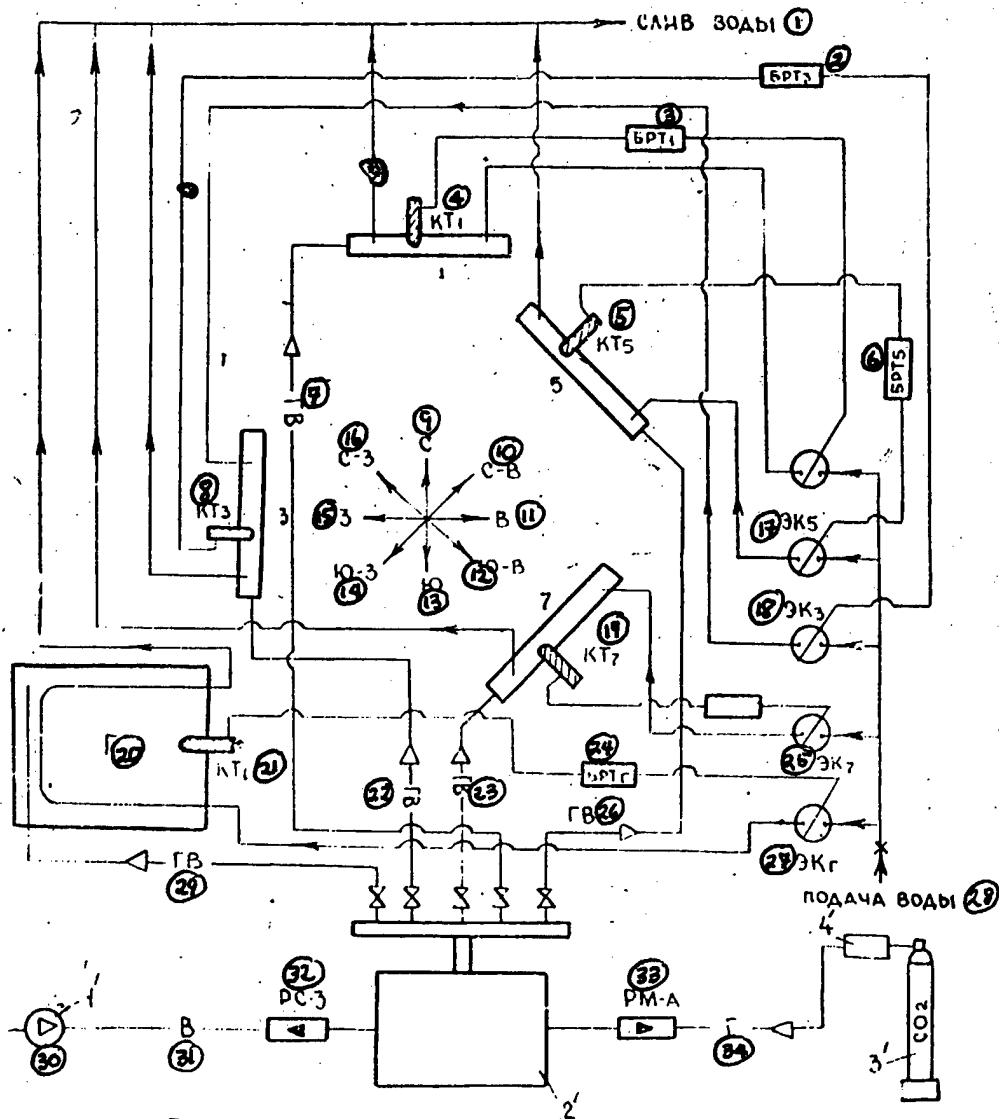


Diagram 1. Functional Sketch of Experiment's Operation

Key:

- | | |
|------------------------------------|---------------------------------|
| 1. Water SLNV [expansion unknown] | 18. Electromagnetic valve No 3 |
| 2. Temperature regulator unit No 3 | 19. Contact thermometer No 7 |
| 3. Temperature regulator unit No 1 | 20. Gas |
| 4. Contact thermometer No 1 | 21. Contact thermometer (gas) |
| 5. Contact thermometer No 5 | 22. Gas-air |
| 6. Temperature regulator unit No 5 | 23. Gas-air |
| 7. Gas-air | 24. Temperature regulator (gas) |
| 8. Contact thermometer No 3 | 25. Electromagnetic valve No 7 |
| 9. North | 26. Gas-air |
| 10. Northeast | 27. Electromagnetic valve (gas) |
| 11. East | 28. Water input |
| 12. Southeast | 29. Gas-air |
| 13. South | 30. Compressor |
| 14. Southwest | 31. Water |
| 15. West | 32. RS-3 rotameter |
| 16. Northwest | 33. RM-A rotameter |
| 17. Electromagnetic valve No 5 | 34. Gas |

Experimental Method

Chlorella vulgaris, strain LARG-3 was used at an optimal temperature of 36-38°. The *Chlorella* was cultivated on a Tamium [?] medium. The temperature of the suspension in the daytime hours was maintained at 37±1°C, and the pH of the suspension was 6.0 - 6.5. CO₂ concentration in the gas-air mixture was 3 percent, and its flow rate was 300 l/hr per 1 liter of suspension. Illumination on the chamber surfaces was measured daily in actinometric hours by a color-corrected photometer graduated by a calibrated lamp. The duration of the apparatus' operation depended upon the length of the day which was 12 hours on the average. The *Chlorella* was cultivated under storage conditions. The dynamics of irradiation distribution and water temperature within the chamber were measured prior to the cultivation experiments, and scraps of black cloth were placed into the chamber in order to simulate a completely absorbent layer. The suspension volume in each chamber was 0.5 liters.

Investigation Results

Temperature changes during the day in bilaterally illuminated horizontal and vertical variably oriented chambers indicate that the temperature maximum is 38 - 40° in the daytime hours, but the time interval of these temperature values is different (Diagram 2). The daytime temperature did not go above 33 - 34°C in the case of the vertical cylindrical layer. The

biomass concentration in the suspension was found by a rapid express method by means of assaying the thickened precipitate in specially graduated centrifuge vessels [1]. Based on the curves obtained for culture growth, and knowing the biomass concentration at a specific time of each day, and accounting for the volume of the suspension, the biomass increment for a light day was computed by the following formula:

$$G = [G_{n+1} - G_n] \times v/S, \text{ g/m}^2 \cdot \text{day},$$

where G_{n+1} , G_n - is the morning concentration of biomass of successive rated days, g/l; v - is the suspension volume in the chamber in liters; S - is the area of the chamber in square meters.

By using the known [4] value for energy equivalent for chlorella (6.15 watts.hr/g), the effective energy stored by the culture during its growth was determined, $Q_{ef} = 6.15 \times G$, Watts \times hr/m² \times day. The quantity of solar radiation incident upon the radiation detector surface of the layer was determined by approximating their step-wise intervals from the curves for illumination changes on the chamber surfaces. In order to determine the amount of FAR [light-activated radiation?] in a day, one may use the coefficient 3.8 Watts/m² \times klx [2].

The amount of solar radiation incident upon a horizontal layer illuminated only from above is

$$Q_{inc.h} = S \times \sum_{\tau} E_h(t_i \times t, \text{ Watts} \times \text{hr/m}^2 \times \text{day})$$

and solar radiation incident upon vertical chambers illuminated from two sides is

$$Q_{inc.v} = S \times \sum [E_{v1} \times (t_i) + E_{v2}(t_i)] \Delta t,$$

where E_{v1} , E_{v2} is the illumination from the total radiation of the vertical plane from the opposite sides, in klx.

The efficiency coefficient of the culture's light energy in the chamber basically depends on the degree to which all the cells are provided with the incoming light energy, and is equal to $\eta = Q_{ef}/Q_{inc.} \times 100\%$.

Let us now examine the computational results (see Diagram 2,a). The absolute value for photosynthesis indicates that the vertical chambers of variable orientation under review yield a certain increase (by 8 - 15 percent) or have the same photosynthesis value as that obtained when the chamber is in the horizontal position. The photosynthesis value in the

vertical chamber with a normal north-south orientation in all of the days of chlorella cultivation was lower than the photosynthesis value in the vertical chambers oriented in other ways as well as in the horizontal chamber. This rule is also observed for the efficiency coefficient of light energy. All of the cited results were obtained during the cultivation of chlorella in clear weather. The culture growth curves for three overcast days (See Diagram 2,b) are practically the same. Therefore, from the viewpoint of non-light parameters, all of the chambers were under equal conditions, and the differences obtained in the photosynthesis values in clear weather may only be explained by the differences in the amount of light reaching the radiation detector surfaces of the chambers under study.

The energy capacity values μ of the vertical layers of variable orientation (See Diagram 2,c) were found by the method described in [3].

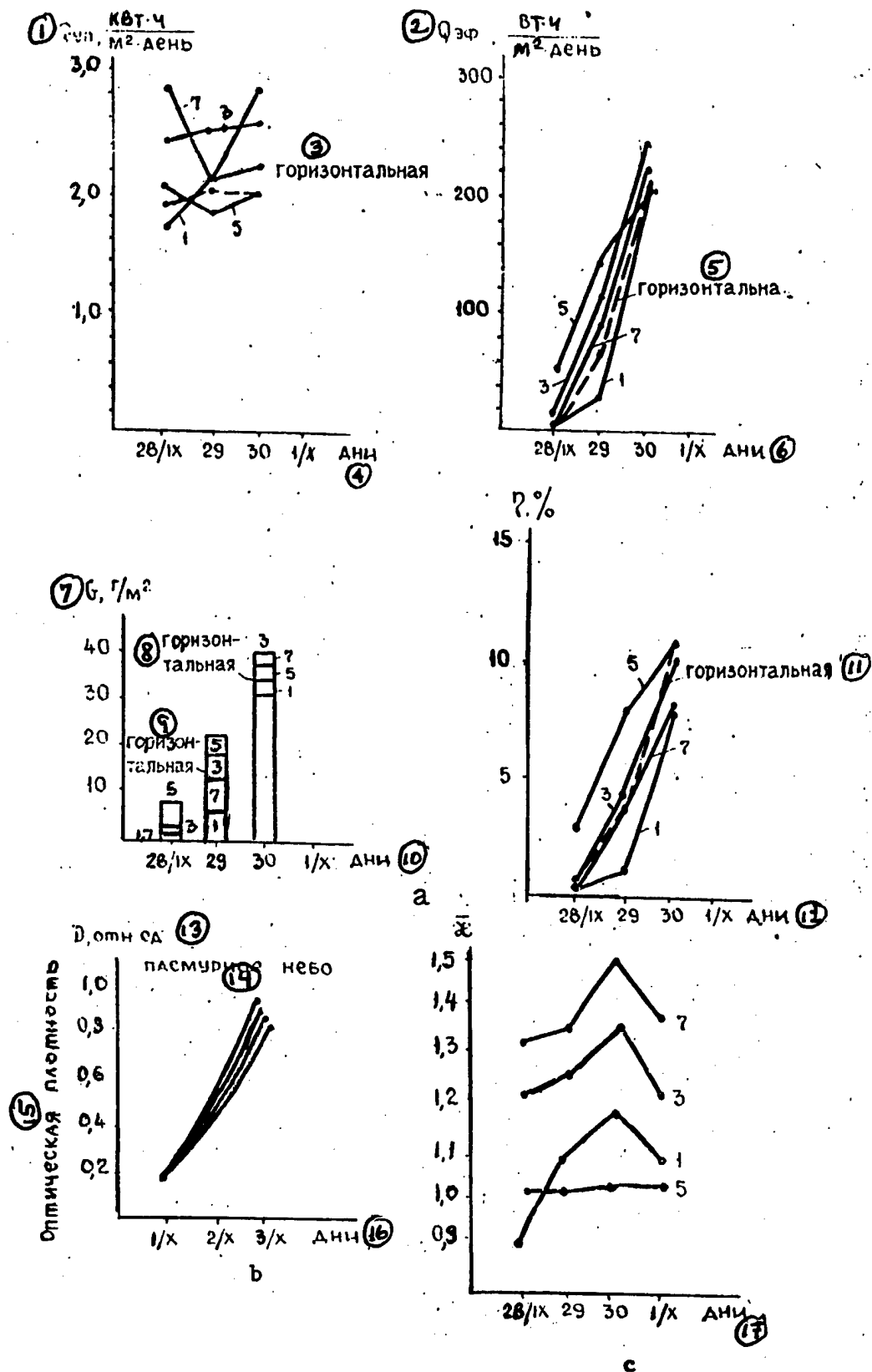


Diagram 2. Photoenergy Characteristics of Chlorella Growth. a) in planar bilaterally illuminated vertical variably oriented chambers (September 1982); b) in variably oriented vertical chambers, bilaterally illuminated (overcast days); c) photoenergy capacity of vertical planes during bilateral illumination (clear days)

Key:

- | | |
|--|---------------------|
| 1. $Q_{inc}, \frac{Kwatt_{hr}}{m^2 \cdot day}$ | 9. Horizontal |
| | 10. Days |
| | 11. Horizontal |
| 2. $Q_{ef}, \frac{Watt_{hr}}{m^2 \cdot day}$ | 12. Days |
| | 13. D, relative to |
| 3. Horizontal | 14. Overcast days |
| 4. Days | 15. Optical density |
| 5. Horizontal | 16. Days |
| 6. Days | 17. Days |
| 7. G, h/m^2 | |
| 8. Horizontal | |

Thus, the experimental results do not deviate from the theoretical computations [3]. In the southern latitudes during the fall, it is practically of no significance how the photosynthesizing layer is positioned -- either horizontally or vertically at any orientation. The only undesirable orientation of the standard is the north-south orientation.

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6289

CSO: 1840/1882

MICROBIAL TECHNOLOGY FOR WASTE-FREE PRODUCTION OF GREEN PROTEIN CONCENTRATE
FROM LUCERNE

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR: SERIYA BIOLOGICHESKIKH I
KHIMICHESKIKH NAUK in Russian No 2, Mar-Apr 85 (manuscript received 23 Nov
83) pp 33-38

LUPASHKU, M.F., YAKIMOVA, G.I. and ATAMANYUK, D.A.

[Abstract] In order to fully utilize lucerne harvests, trials were conducted on the utilization of the brown leaf juice of lucerne for cultivation of microorganisms in an attempt to utilize useless by-products. The juice contains a variety of soluble carbohydrates, nonprotein nitrogenous compounds, vitamins and trace elements and, depending on the method of preparation, small quantities of protein. Used in culture media, the extract was found suitable for the cultivation of a variety of yeasts that have potential as feed, giving yields of 4.2-27.4 g/L for *Rhodotorula gracilis*, 6.6-25.9 g/L of *Saccharomyces cerevisiae*, 5.6-15.4 g/L of *Candida utilis*, 5.9-22.8 g/L of *Hansenula anomala*, and 5.4-33.2 g/L of *Candida rugosa*. In addition, *Rh. gracilis* was identified as the yeast most effective in biotransformation of saponins and other toxic agents in the juice. The juice was also effective in lactobacilli cultivation, which can subsequently be used in silage formation as an acidifying agent and as an antagonist of pathogenic microorganisms, with the detoxified extracts having utility as feed additives. Figures 1; references 13: 12 Russian, 1 Western.

[1934-12172]

MICROBIOLOGICAL CONTROL OF MURINE RODENTS IN AGRICULTURAL AREAS OF SOUTH-
WESTERN USSR

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR: SERIYA BIOLOGICHESKIKH I
KHIMICHESKIKH NAUK in Russian No 2, May-Apr 85 (manuscript received
25 May 84) pp 52-54

KORCHMAR', N.D., KANDYBIN, N.V., SMELYY, V.L., RADUL, M.M. and DAVIDCHUK, V.L.

[Abstract] Extensive use of chemical for rodent control in agricultural regions carries the danger of environmental pollution, a threat that can be overcome by the use of biological control methods. In view of this, studies

were carried out in the Suvorov Rayon of Moldavia--which has a landscape typical of the Southwestern USSR agricultural belt--on the use of a microbial preparation--bakterodentsid [sic, bacterodenticide (?)--for the control of murine rodents. Applications of the preparation were carried out in autumn and winter in areas with high population densities, into burrows and other areas of habitation, in doses of 10-30 g. Within a 45 day period the population density of murine rodents in the treated areas decreased by 64.0 to 79.6%, pointing to the effectiveness of this approach. In addition, this approach is as, or more, effective than the standard application of the microbiological agent over a wide area in an indiscriminate manner, and is considerably more cost-effective. References 5 (Russian).

[I934-1217Z]

ENVIRONMENT

ADAPTATION TO ARCTIC LIFE

Moscow NEFTYANIK in Russian No 3, Mar 85 pp 28-30

VASILYEV, A.

[Abstract] Life in the Arctic continues to be a challenge for man, requiring of him strength and endurance. Adaptation to the conditions of far northern areas are real problems even today. To cultivate this adaptation, studies are necessary in social, economic and biological fields. Considerable work in these disciplines is being carried out at the Institute of Biological Problems of the North (located in the city of Magadan). The present article reports on some of these studies. One major problem is personnel turnover in spite of high inducement bonuses paid (20-30%). Some problems concern social adaptations (problems connected with polar nights), some--simple adaptation of clothing and footwear. Evidently, many of the volunteers go north to escape personal problems; this is to be avoided in settling this territory. About two years are required for most people to adapt to northern conditions. Nutritional aspects of adaptation to northern conditions are also discussed.
[361-7813]

UDC 551.46.09:623.5(261)

BIOMONITORING OF CENTRAL ATLANTIC SURFACE WATERS

Kiev DOKLADY AKADEMII NAUK UKRAINSKOY SSR. SERIYA B: GEOLOGICHESKIYE, KHIMICHESKIYE I BIOLOGICHESKIYE NAUKI in Russian No 5, May 85 (manuscript received 6 Nov 84) pp 81-83

MIRONOV, O.G., LOPUKHIN, A.S., LEBED', A.A. and TARKHOVA, E.P., Institute of Biology of Southern Seas, Ukrainian SSR Academy of Sciences, Sevastopol

[Abstract] The first biomonitoring of the central waters of the Atlantic Ocean was carried out in 1984 during the 17th expedition of the research vessel Professor Vodyanitskiy. The area covered ranged from 35° north latitude to 28° south latitude (sl). Analysis of ATP levels as indicator of microplankton biomass showed low concentrations characteristic of oligotrophic waters (30-70 ng/dm³). Around Cape Blanc high levels (ca. 270 ng/dm³) prevailed, characteristic of eutrophic waters. Proceeding toward

the Equator, ATP levels fell to 60-100 ng/dm³. Between 9° and 15° sl, two peaks were encountered indicative of eutrophication. In the proximity of South America, ATP levels generally ranged from 20 to 50 ng/dm³. Quite similar patterns in general were encountered with determinations of chlorophyll a concentrations. In addition, determinations of heterotrophic, oil-oxidizing, lipolytic and amylolytic microbial counts also resulted in the identification of different regions of the Atlantic Ocean in terms of pollution levels with petrochemicals. Figures 1; references 5: 4 Russian, 1 Western.

[I933-12172]

EPIDEMIOLOGY

UDC 614.47:613.95(575.4)

ANALYSIS OF PEDIATRIC MORBIDITY AND IMMUNITY PATTERNS IN TURKMEN SSR BY
PREVENTIVE MEDICAL SERVICES

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 8, Aug 84 pp 17-22

MURADOVA, G.D., BEDAREVA, G.G., KHUDAYNAZAROV, T.N., RUSAKOVA, Ye. V. and
VASIL'YEVA, V.I., Scientific Research Institute of Epidemiology and
Microbiology imeni Gamaleya, USSR Academy of Medical Sciences; Turkmen
Republic Sanitary-Epidemiologic Station

[Abstract] An analysis was conducted on the pediatric population in the
Ashkhabad and Kaakhka rayons of the Turkmen SSR to determine the morbidity
status and postimmunization humoral immunity over the period 1960-1982 in
terms of measles, tatanus and diphtheria. The survey showed that during
the 20-year period in question the incidence of diphtheria dropped 19.5-
fold, that of measles about 8-fold, and that of tatanus about 10.5-fold.
However, these figures are still higher than for the rest of the USSR, par-
ticularly the European republics. Serological surveys demonstrated that
approximately 21% of the pediatric population below the age of 7 years is
unprotected against diphtheria, with the analogous figures for tetanus and
measles standing at 16.5 and 28%. The obvious challenge to the health
authorities is to determine the reasons for the relative ineffectiveness of
mass vaccination programs in the Turkmen SSR. Figures 3; references 6
(Russian).

[I916-12172]

PHAGE TYPING OF TYPHOID FEVER AGENTS IN ASHKHABAD CITY AND ASHKHABAD OBLAST

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 7, Jul 84 pp 20-22

BERDYKLYCHEVA, G.N., Ashkhabad Oblast Sanitary-Epidemiologic Station

[Abstract] Phage typing was conducted on the isolates obtained from cases
of typhoid fever and carriers in Ashkhabad and Ashkhabad Oblast for the
period 1977-1982, using a collection of 45 phages. In that period of time
the isolates obtained in the Oblast as a whole fell into 23 phagovars, and
those from the city into 25 different phage types. The most frequently

encountered types in the Oblast were A₁, E₁, M₁ and 28, and in the city A, D₁, D₆, D₅, E₁, M₁ and 39. Since the phage types isolated could be correlated with the relative morbidity level of seasonal dynamics, as well as patient and carrier age, such studies obviously constitute a valuable epidemiologic tool for monitoring the status of typhoid fever. References 5 (Russian).

[I915-12172]

UDC 616.935-02(470-67)

ETIOLOGY AND EPIDEMIOLOGY OF DYSENTERY IN TASHAUZ

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 7, Jul 84 pp 23-26

MEL'KUMYANTS, N.B., KHANGEL'DYIEVA, M.K. and BABEKOVA, Z.P., Republic Sanitary-Epidemiologic Station; Tashauz Oblast Hospital; Tashauz Municipal Sanitary-Epidemiologic Station

[Abstract] A 13 year (1971-1983) bacteriologic study was conducted on the organisms responsible for dysentery in Tashauz. At the present time, bacteriologic confirmation of dysentery is obtained in 45-50% of the cases, with the remainder diagnosed on the basis of clinical symptomatology. Dysentery in Tashauz is primarily due to *Sh. flexneri*, followed in importance by *Sh. sonnei*, *Sh. boydii* and, to a lesser extent, by mannitol negative rods. At no time were *Sh. dysenteriae* serovars 1, 5, 6, 7, 8, 9 or 10 isolated. The *Sh. flexneri* serovariants undergo constant changes, with serovars 1 and 2 showing predominance at the present time, with a smaller contribution to the clinical picture being made by serovar 6. The seasonal incidence of the various species follows the pattern observed in other areas: *Sh. flexneri* dysentery predominates in spring and summer, while that due to *Sh. sonnei* predominates in late summer and autumn. References 10 (Russian).

[I915-12172]

STUDIES ON HALOPHILIC VIBRIOS -- ETIOLOGIC AGENTS OF HUMAN TOXICOINFECTIONS IN TURKMEN SSR

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 7, Jul 84 pp 30-34

FRIAUF, E.V., ZYKIN, L.F., SVYATOY, V.I., RAZVYKH, V.M., FLORENTSEV, Yu. L. and YEZHNIKOV, V.N., Turkmen Anti plague Station

[Abstract] Studies were conducted on the isolation of halophilic vibrios from various water bodies in Turkmenia, including Caspian Sea waters from Krasnovodsk. A total of 65 strains were isolated, of which 52 were parahemophilic and 13 liquefied algin. Bacteriological studies on the parahemophilic organisms showed that 96% gave a positive Kanagawa reaction (erythrocyte hemolysis) on Wakatsuma's medium with rabbit blood. The parahemolytic

strains were also tested for pathogenicity on neonatal rabbits and suckling mice, with the vast majority of the strains killing the animals. It appears that human cases of acute toxicoinfections should be examined for halophilic vibrios, particularly in cases occurring along the Caspian seashore following ingestion of salted, sun-dried fish, cured fish fillets, or pickled cucumbers. References 11: 9 Russian, 2 Western.

[1915-12172]

UDC 616-002.2-022:578.833.27-07:616.831-076.4

ULTRASTRUCTURAL CHANGES IN CNS OF MONKEYS WITH CHRONIC TICK-BORNE
ENCEPHALITIS

Moscow ARKHIV PATOLOGII in Russian Vol 47, No 3, Mar 85 (manuscript received 21 Feb 84) pp 46-52

YERMAN, B. A., TULAKINA, L. G., ZUBENKO, A. V. and SUBBOTINA, L. S.,
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of Health, Sverdlovsk

[Abstract] Pathogenesis and morphology of chronic tick borne encephalitis (TBE) was studied on 8 Rhesus monkeys. Characteristic changes were noted in CNS, different from those observed in acute TBE: absence of cellular infiltrates and proliferation of cells, perivascular infiltration and glial nodes as well as hyperemia, stasis and hemorrhaging. Wide-spread destructive changes were seen in cellular ultrastructures and intercellular elements of CNS (neurons, astrocytes and intercellular elements of CNS (neurons, astrocytes, oligodendrocytes, dendritic cells, myelin, and vascular walls), accompanied by severe edema of the brain tissue with symptoms of spongy degeneration. Few virions with or without altered supercapsoid membrane were localized in neuron cytoplasm and in intracellular spaces. No active cellular production of the virus was noted. Thus, the pathological process was characterized by dystrophic alterations, not the inflammatory ones which occur in acute infections. The chronic infection of TBE appears to be a serious viral infection with specific morphologic and pathogenic characteristics. Figures 3; references 19: 17 Russian, 2 Western.

[345-7813]

UDC 614.47+616.988.23(575.4)

RESULTS OF MASS IMMUNIZATION AGAINST POLIOMYELITIS IN TURKMEN SSR IN 1980-1981

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 9, Sep 84 pp 16-18

BOYKO, V.M., KARASEVA, I.A., MAMAYEV, V.I. and BEDAREVA, G.G., Scientific Research Institute of Poliomyelitis and Viral Encephalitides, USSR Academy of Medical Sciences; Turkmen Republic Sanitary-Epidemiologic Station

[Abstract] Despite an extremely low incidence of clinical poliomyelitis in some areas of the USSR, e.g., Ukraine and Belorussia where the incidence stands at 0.003-0.03% , the incidence in 1970-1979 in the Southeastern regions, including Turkmen SSR, exceeded the median for the USSR. In Turkmenia, cases peak in summer and autumn, with 91.1% of the cases involving children below the age of 3 years, of whom 45.7% are less than a year old. In the 1980-1981 period 15.7% of patients were found not to have been immunized, while 84.3% had been immunized from 1 to 10 times. Furthermore, 60% of the subjects in the immunized group had not been immunized according to prescribed schedules and/or dosage. In June 1981, mass immunization was carried out on the basis of epidemiologic data, resulting in a decrease in the incidence of poliomyelitis in August of that year, with the decrease becoming most remarkable in 1982, reaching the lowest level in 25 years. This experience once again confirms the need for careful assessment of local regional characteristics of a disease in planning immunization programs for maximum effectiveness. References 2 (Russian).

[1917-12172]

FOOD TECHNOLOGY

BRIEFS

NEW DAIRY PRODUCTS--"They remain in reserve" is the title of an article by USSR Academy of Medical Sciences member T. Sharmanov published in the 18 December 1984 issue of PRAVDA. This article concerned the introduction of scientific advancements such as those achieved in human nutrition. Minister of Health S. Burenkov has informed the editorial board that a new special joint commission of the Ministry of Meat and Meat Products and the Ministry of Food Products is working on products for the feeding of children. Plants are opening in the Bashkir ASSR, the Moscow Oblast, Byelorussia and the Ukraine. Furthermore, 26 plants in the Ukraine have begun to produce liquid dairy mixtures and still other facilities are operating. The production of dry and liquid dairy mixtures in the Soviet Union has reached a volume of 41,000 and 32,000 tons per year respectively. The infant dairy formula "Baldygran" developed by the Kazakh branch of the Institute of Nutrition of the USSR Academy of Medical Sciences is recommended for use in all of the republics and has been included in the assortment of food given children in day-care centers at mines. For the time being, this product cannot be used on a broader scale because there has still not been worked out a method for producing it in large amounts. The USSR Ministry of Health has devoted much attention to the production of edible protein from by-products. Many institutes of medical research are working on this problem. At the present time, much hygienic, medical and biological research is being conducted to assess the quality of protein isolates and concentrates from various sources and how they can best be used for nutritional purposes. The results of much of this work have found practical applications but it must be remembered that research in this field is usually of an advanced experimental nature. Industry cannot as of yet develop production in sufficient quantities. As the many years of experience of the Ministry of Health and other ministries in creating science and production associations have shown, it is best for all interested parties to take part in the development of a new product from the very start. This has been reflected in the order issued by the USSR Ministry of Health for medical and nutritional specialists to work cooperatively in the development of new products as soon as a stage is reached in which the necessary technology has been created. The USSR Ministry of Health will continue to perfect ways in which the achievements of medical science can be introduced. [Text]

[Moscow PRAVDA in Russian 29 Mar 85 p 37 12261

CSO: 1840/324

UDC 575:582.26/.27:639.3.06(26)

GENETIC ASPECTS OF COMMERCIAL MARICULTURE OF SEAWEEDS

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 19, No 2, Mar-Apr 85 pp 145-148

STOLBOVA, N.G., Institute of Biology of Southern Seas, Ukrainian SSR Academy of Sciences, Sevastopol

[Abstract] With intensification of mariculture of commercially important seaweeds in the USSR, a gradual transition has taken place from simple harvesting technology to actual cultivation of the species of interest. A more fundamental understanding of the seaweeds that the latter approach demands can be provided by more detailed genetic information on the seaweeds. Although such studies are in their infancy and factual data is rather limited, it is evident that genetic manipulation and breeding will contribute considerably to the overall cost-effectiveness of mariculture. Studies are currently underway on genetically meaningful characteristics of the cell cycle of the various seaweeds, the interrelationship of haploid and diploid phases, syngamy, meiosis, and nuclear transformations that lead to recombinational events and development of new genotypes. Polyploid forms, because of their more rapid growth, seem promising in harvest-improving technology, while in other cases diploid and monoploid forms have been determined to produce different metabolic products. Analysis and correlation of such factors will have to antedate full-scale commercial mariculture. References 35: 9 Russian, 26 Western.

[356-12172]

PSYCHOLOGICAL FOUNDATIONS OF SOVIET FOOD PROGRAM

Moscow PSIKHOLOGICHESKIY ZHURNAL in Russian Vol 6, No 1, Jan-Feb 85
(manuscript received 3 Sep 82) pp 26-34

POTEMKINA, O.F. and RUBAKHIN, V.F. (deceased), Institute of Psychology, USSR Academy of Sciences

[Abstract] An analysis is conducted on the psychological factors underlying the realization of the Soviet Food Program, encompassing both administrative psychology and the psychology of a socialist environment. The Soviet Food

Program is being implemented for the benefit of the entire Soviet society and, as a result, can rely on all the positive factors of service to others and selflessness that characterize the administrative cadres and the workers' collectives. Concomitantly, reinforcement is necessary to achieve the highest levels of efficiency in an area so crucial to the national welfare, and special psychological services must be devised to meet the myriad of needs that arise in any new program. One area of psychology that requires further development is that applied to the agricultural sector. The latter lies not simply in motivation and instillation of a higher sense of responsibility in the agricultural workers, but in organizing specialized services that address administrative and educational problems in agriculture, deal with the socioeconomic climate in the rural areas, the rural family, and zoopsychology. References 26 (Russian).

[351-12172]

GENETICS

UDC 612.821 + 575.17

COMPARATIVE POPULATION ANALYSIS OF VARIABILITY IN HUMAN NEURODYNAMICS AND PSYCHODYNAMICS

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI in Russian Vol 34, No 6, Nov-Dec 84 (manuscript received 13 Feb 84) pp 1031-1040

BULAYEVA, K. B., Institute of General Genetics, USSR Academy of Sciences, Moscow

[Abstract] Results were reported of the study of phenotypic variability and heredity of neuro and psychodynamic parameters on population isolates with different ethnic backgrounds. In general, tendencies were observed to increased variability and heredity in the most heterogeneous and inbred populations with lesser manifestation in isolated populations. A hierarchical order of heredity and mutation was noted: the least mutable and most hereditary were the morphologic indices and, conversely, the most mutable were the parameters of psychodynamic level; the neurodynamic level parameters were in between these extremes. Interpopulation differences found in this study were along the lines observed in interindividual groups: the degree of phenotypic manifestation of various indices in human population was heterogeneous. Both genetic and environmental causes responsible for the interpopulation differences were observed. Figure 1; references 23: 14 Russian, 9 Western (2 by Russian authors).

[360-7813]

UDC 575.113:577.155

PARTIAL SUPPRESSION OF *recB recC* MUTATIONS IN *E. COLI* BY PLASMID pBR322 CONTAINING CHROMOSOMAL INSERT FROM *BACILLUS SUBTILIS*

Kiev TSITOLOGIYA I GENETIKA in Russian Vol 19, No 2, Mar-Apr 85 (manuscript received 11 May 84) pp 128-132

BARABANSCHIKOV, B.I., BASHKIROV, V.I., GIZATULLIN, F. Sh. and GULITASHVILI, V. Sh., USSR Academy of Sciences, Moscow

[Abstract] The ability of *Bacillus subtilis* ATP-dependent DNAase (DNAse) to substitute for *E. coli* DNAase in *recB recC* mutant *E. coli* was investigated

by inserting the DNase chromosomal segment of *B. subtilis* into *E. coli* plasmid pBR322, and subsequent analysis of recipient *E. coli* for DNase activity, UV resistance, and recombination efficiency with Hfr H donor. The presence of the recombinant pBR322 (designated pKU 1) led to increase in specific DNase activity to normal or even supranormal levels, the latter reflecting multiplicity of pKU 1 copies. However, expression of *B. subtilis* DNase activity in *E. coli* did not insure fully functioning DNA repair mechanism in *E. coli* following exposure to lethal levels of UV irradiation, indicating that complete recovery of the rec^+ phenotype in *E. coli* did not occur. The *B. subtilis* DNase was even less effective in promoting recombination in the *E. coli* cells. Although the frequency of recombination with Hfr H donors was higher than for the recB recC mutant, it was only 3% of that seen with rec^+ *E. coli*. Thus, although the *B. subtilis* DNase can suppress recB recC mutation in *E. coli* to a significant extent, it cannot efficiently replace *E. coli* DNase in recombination. Figures 1; references 15: 7 Russian, 8 Western.

[356-12172]

HUMAN FACTORS

UDC 612.821 + 612.846

ACTIVE OCULOGRAPHY AS DIAGNOSTIC METHOD OF HUMAN PSYCHOPHYSIOLOGICAL STATE

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI in Russian Vol 34, No 6, Nov-Dec 84 (manuscript received 15 May 84) pp 1022-1030

VOLKOV, V. G. and MASHKOVA, V. M., Institute of Higher Nervous Activity and Neurophysiology, USSR Academy of Sciences, Moscow

[Abstract] Active oculography is seen as a sensitive method for determination of the psychophysiological state of operators, for determining the degree of their tiredness and suitability for additional operational functions. Oculomotor asymmetry appeared to be the earliest symptom of the deterioration of operator's performance capability; this determination was possible thanks to individual registration of the tracking of eye movements. Increased number of oculomotor asymmetries and dispersed values of latent periods indicate inadequacy such as observed in patients suffering from blood flow deficiency in the brain, usually intensified because of various stress factors. Separate recording of oculograms appears to be an effective, nonclinical method of diagnosing and localizing the deficiency of blood supply to the brain. Figures 4; references 18: 13 Russian (1 by Western authors), 5 Western.
[360-7813]

UDC 613.6-07:612.766.1

OPERATIONAL METHOD OF MONITORING HUMAN WORKING CAPACITY

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 85 (manuscript received 26 Dec 83) pp 22-25

GOSUDAREV, N. A. and STAVITSKIY, K. R., Institute of Physical Culture, Moscow

[Abstract] The need to control human work capacity for optimal organization of labor and rest period is obvious, especially in activities with high physical and psychological demands placed on the performers. This can be achieved by studying brain biopotentials reflecting the state of neurological structures of the brain. The authors developed a method based on

"quasistationary potential" (QSP) measured by weakly polarized silver chloride electrodes and used it in evaluating work capacity of various subjects. The active electrode was placed on the head and the passive one on the palm surface. Work capacity was judged on 323 volunteers by the rate of sensomotor reactions, attentiveness, memory tests and coordination activity. QSP was measured along with these tests. Nine permutations of QSP levels were identified, of which only three were of any significance: QSP high prior to and past the exercise, QSP average before and high after the exercise, and QSP low before and high after the exercise. These tests were applied in admitting skate racers to training. Figures 1; references 8 (Russian).

[I926-7813]

UDC 612.82+612.821.2+612.821.3+154

EVALUATION OF OCCUPATIONAL EFFICIENCY OF DISPLAY TERMINAL OPERATORS

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI in Russian Vol 35, No 2, Mar-Apr 85 (manuscript received 26 Dec 83) pp 232-237

MARTYNIKHIN, A. V., POLYAKOV, I. V., TIMOFEYEV, A.A. and RUBAKHINA, Ye. V.,
First Leningrad Medical Institute imeni I. P. Pavlov

[Abstract] A group of professional display terminal operators at a computer center was evaluated for proficiency for searching numbers in a coordinate grid. The group consisted of male and female employees, 25 to 45 years old, subjected to a test battery designed to provide 12 regression equations characterizing response times under a variety of conditions and factors. The group could readily be divided into 'fast' and 'slow' responders, with the mean response time between differing to a statistically significant degree ($P < 0.01$). Basically, the 'fast' operators evidenced greater emotional stability, a shorter learning time, and greater searching efficiency. The 'slow' responders required considerably more learning time, were emotionally labile, and relatively inefficient in searching operations. On the basis of the spatio-temporal characteristics, the former group demonstrated greater job fitness and corroborated the fact that such techniques can be used to assess job suitability for display terminal operators. Figures 4; references 5 (Russian).

[357-12172]

LABORATORY MANUALS FOR ENGINEERING AND WORK PSYCHOLOGY

Moscow PSIKHOLOGICHESKIY ZHURNAL in Russian Vol 6, No 1, Jan-Feb 85 pp 162-165

DENISOV, V. A.

[Abstract] The available literature on engineering and work psychology seems to suffer from a shortage of practical laboratory manuals that would introduce the novice to the intricacies of this branch of psychology. Between 1978

and 1983 five Soviet manuals have been published, which differ in the scope of the problems they address and in the degree of theoretical background that they provide. Although all are written at a high scientific and scholarly level, the number of copies of each edition are low, and the authors failed to provide enough reference sources. In particular, the bibliography is uniformly poor when it comes to primary sources, which often imparts an anecdotal nuance to a work. Nevertheless, they do reflect the recognition that such manuals are needed and it can be hoped that they will improve with time.

[351-12172]

21 August 1985

IMMUNOLOGY

HIGH-IMMUNITY ARTIFICIAL VACCINES

Moscow NTR: PROBLEMY I RESHENIYA in Russian No 9, 30 Apr-13 May 85 p 7

KHAITOV, R., doctor of medical sciences, deputy director of the Institute of Immunology, USSR Academy of Medical Sciences

[Abstract] The author reports on successes in developing multipurpose artificial vaccines that produce high levels of immunity. The work was done by scientists of the Institute of Immunology, Ministry of Health, who were headed by academician R. V. Petrov, and by polymer chemistry scientists headed by Corresponding Member of the USSR Academy of Sciences V. A. Kabanov.

The vaccines reportedly induce high immunity even in organisms with a genetically-weak immune system. The artificial vaccines are said to be synthetic complex macromolecules composed of an antigen and a specially-developed polymer which produces a powerful immune reaction. It is claimed that such molecules cause antibodies to form 100 times as intensively as natural antigens. The artificially-created complex of a polymer and an antigen is said to stimulate an immune reaction in any organism, regardless of its hereditary structure.

Commenting on the development of the polymer, the author notes that the search led to polyions, synthetic polymers that do not have counterparts in nature. Thanks to the presence of multiple charges in the polymer chain, these substances are capable of interacting universally with proteins and other biological macromolecules and of forming stable ion links with them. They 'adhere' to the surfaces of lymphocytes and activate them.

The author reports that an artificial vaccine against murine typhus has been developed in collaboration with the Institute of Vaccines and Serums imeni Mechnikov, and an artificial vaccine against experimental influenza infection has been developed with the assistance of virologists. The latter vaccine is said to stimulate immunity in all animals regardless of their genetic peculiarities.

FTD/SNAP

CSO: 1840/334

UDC 616.097

EFFECTS ON IMMUNOCOMPETENT CELLS OF ACCLIMATIZATION TO HOT CLIMATE

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 10, Oct 84 pp 9-12

KHUDAYBERGENOV, M.A. and MAMEDOV, Kh.M., Chairs of Introductory Internal Diseases and Surgical Diseases, Pediatrics Faculty; Central Scientific Research Laboratory, Turkmen Order of People's Friendship State Medical Institute

[Abstract] Cohorts of indigenous residents and newly immigrated residents of Turkmenistan were assessed for immune status on the basis of lymphocyte counts, phagocytic activity of macrophages, and other immune status indicators. The groups encompassed males and females, 18-21 years old. In general, both similarities and differences between the groups were observed, indicating that adaptation to hot, arid climates does affect immune status indicators. With the advent of the hot season, macrophage activity increases in both groups, without a significant difference between them. In the newly arrived group, the counts of T and B lymphocytes are lower than in the natives, while that of the O lymphocytes is greater. The onset of summer induces a transient depression of total lymphocyte and T cell counts in the natives and a concomitant increase in O cells, but the B cells and the absolute O cell counts show no significant variations. In the immigrant group, hot weather is accompanied by transient increase ($P < 0.05$) in lymphocyte counts, with differential counts showing a depression of the T cell population. References 7: 6 Russian, 1 Western.

[I918-12172]

UDC 577.27

SELECTIVE CYTOTOXIC EFFECTS OF IMMUNOTOXIN ON TUMOROUS ERYTHROID CELLS OF MICE

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 282, No 2, May 85 (manuscript received 27 Aug 84) pp 485-488

TONEVITSKIY, A.G., MECHETNER, Ye.B., ROZINOVA, E.N. and IYEVLEVA, Ye. S.,
All-Union Cardiological Scientific Center and All-Union Oncological Scientific
Center, [Both of] USSR Academy of Medical Sciences, Moscow

[Abstract] Monoclonal rat IgG with antibody specificity against mouse erythroid cells was conjugated to the A chain of ricin by N-succiminidyl-3-(pyridyldithio) propionate, to create an immunotoxin effective against murine erythroleukemic cells. The immunotoxin showed specific binding to erythroblasts and cytotoxicity, the latter measured by inhibition of ^{14}C -leu uptake into cellular proteins under in vitro conditions. In vivo studies showed that preincubation of AKR mice erythroleukemic cells with the immunotoxin prior to i.v. injection of the cells into recipient AKR mice reduced the number of splenic colonies from 10.7/spleen to 0.16/spleen. These observations indicate that such synthetic immunotoxins, prepared by conjugation of antibodies, with desired specificity, with nonspecific toxins, may have potential in the management of malignancies under clinical conditions. Figures 3; references 15: 6 Russian, 9 Western.

[1921-12172]

LASER EFFECTS

LASER EFFECTS

UDC 616.89-085-814.1:615.849.19

LASER ACUPUNCTURE IN TREATMENT OF CERTAIN MENTAL DISEASES

Kishinev ZDRAVOOKHRANENIYE in Russian No 1, Jan-Feb 85 (manuscript received 8 Jul 83) pp 30-33

LAKUSTA, V. N., KULESHIN, V. A., LUPUSHOR, V. A. and MAGALNIK, F. M.,
Department of Psychiatry, Kishinev Medical Institute; Psychiatric Clinic,
Ministry of Health Hospital, MSSR

[Abstract] It is noted that the use of electro-acupuncture and laser acupuncture to affect biologically active skin points is attracting more and more attention. In connection with this trend, the therapeutic possibilities of laser acupuncture in psychological diseases was studied by investigating the dynamics of the psychopathological process and state of the vegetative nervous system during laser acupuncture therapy. Of the six subjects with neurasthenia treated, three showed marked or substantial improvement involving decreased pain and improved sleep. Four subjects with obsessive neurosis were treated, with three showing substantial improvement. According to the Ashner test, laser acupuncture increased parasympathetic activity while decreasing activity of the sympathetic nervous system. The most successful results were obtained with subjects suffering from neurotic-appearing enuresis. Of the seven such subjects treated, four showed marked improvement and one substantial improvement. In two of these patients symptoms were abolished. The two treated subjects with enuresis and encopresis also were markedly improved. Since enuresis and encopresis are more difficult to treat with classical acupuncture, laser acupuncture can be a useful adjunct to therapy in these cases. Figures 1; references 9 (Russian).

[I898-12125]

UDC 616.74-089.85:615.849.197-07:616.74-091

MORPHOLOGICAL CHARACTERISTICS OF SKELETAL MUSCLE AFTER DAMAGE WITH LASER
SCALPEL

Moscow ARKHIV PATOLOGII in Russian Vol 47, No 1, Jan 85 (manuscript received
13 Dec 83) pp 24-29

SOLOV'YEV, V. A., Department of Histology and Embryology, Kalinin Medical
Institute, Kalinin

[Abstract] There is a paucity of experimental data on the action on skeletal muscles of optical quanta generators such as carbon dioxide lasers. Laser-induced changes were studied histologically on white rats using a "Skal'pel'-1" CO₂ laser unit. It was shown that, in comparison to a cut wound, the laser incision showed aseptic coagulation necrosis, vacuolization, absence of hemorrhaging along the line of the incision, decreased edema and infiltration of leucocytes. Local submicroscopic changes were observed in muscular tissue resulting from laser hyperthermia; with cellular reproduction, the ultrastructural reconstitution took place. On the basis of histologic findings, it was shown that the ultimate limits of the effective area are formed 3 days post-operatively. Administration of physiological solution to the muscles prior to laser surgery reduced considerably the zone of necrosis. Figures 2; references 12: 10 Russian, 2 Western.

[346-7813]

MEDICINE

ARTIFICIAL ENRICHMENT OF BLOOD WITH OXYGEN

Moscow RADIO MOSCOW WIRE SERVICE in English 20 Jun 85

[Text] Soviet scientists have developed a new and highly efficient machine for enriching blood with oxygen and removing carbon dioxide from it. Most machines of that kind developed so far operate on the so-called contact principles, in them oxygen is introduced into blood directly. The coagulation of blood, an important mechanism of resistance, makes such machines ineffective in most cases. In spite of the introduction of special agents reducing blood coagulation, oxygenators of that type begin to generate blood clots, which may be a hazard to the patient's health. That reduces the period over which they can be continuously used to three hours. There are other drawbacks to such machines as well, and among them is the need to use donor blood and the danger of air bubbles appearing in the blood stream which can injure the small vessels in the grain. The artificial lung--developed on the pattern of its natural counterpart--gets around most of these problems. The machine has been tested in a variety of complicated and prolonged operations and, just as in the human lung, oxygen does not come into direct contact with the blood. In the lung, blood is enriched with oxygen through the walls of very thin capillary vessels whose part is played in the artificial lung by special membranes. They are very effective: in one of the experiments a squirrel spent several hours underwater in a bag made of such membranes, the membranes acted as the gills of fish and supplied the animal with enough oxygen dissolved in the water. The new artificial lung consists of a chamber made up of two sealed membranes with a gas separator inside. Oxygen circulates inside the chamber, whose entire outer surface is covered with a polymer which is in direct contact with the patient's blood. The number of such chambers can be varied. The new machine makes it possible not to use donor blood in many cases and that rules out a number of postoperative complications. The machine is highly reliable and does not introduce clots and air bubbles into the blood. It has already been widely used in heart surgery and in the treatment of acute respiratory conditions.

CSO: 1840/1939-E

UDC 613.6-07:612.766.1

FUNCTIONAL CHANGES IN PERIPHERAL BLOOD LEUCOCYTES OF CREW MEMBERS OF SMALL VESSELS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 2, Feb 85 (manuscript received 30 Mar 84) pp 50-52

LOMOV, O. P. and POLYAKOV, V. V.

[Abstract] Hematologic changes can serve as indices of effects of the environment on the human body. The goal of this study was to evaluate the reactions in peripheral blood of small-vessel crew members during 10-day sea trips. The study subjects lived under crowded conditions, elevated noise levels and high vibration, poor microclimatic conditions and high exhaust levels in the air. The air temperature ranged from 30 to 33°C and relative humidity was 80%. The seamen were examined prior to going out to sea, immediately after trip termination and two days later. The control group consisted of individuals who were land based for about 6 months. It was established that the functional changes in blood leucocytes observed in sea-going seamen were of a complex nature and resulted from the adverse effect of the environment. While no significant changes were observed in the overall blood picture, changes on cellular level were noted with more refined tests. This method could be applied in any situation where undesirable working conditions exist; then they could be corrected. References 9: 8 Russian, 1 Western.

[I926-7813]

MICROBIOLOGY

UDC 579.264

KILLER STRAINS OF BALLISTOSPOROGENOUS SPORIDIOBOLUS NYLAND YEASTS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 282, No 2, May 85
(manuscript received 22 Oct 84) pp 425-428

GOLUBEV, V. I. and TSIOMENKO, A. B., Institute of Biochemistry and
Physiology of Microorganisms, USSR Academy of Sciences, Pushchino, Moscow
Oblast

[Abstract] This is the first communication in the literature reporting on
killer characteristics of basidiomycetes, as observed in the ballisto-
sporogenous Sporidiobolus genus. Analysis of zones of inhibition obtained
with a variety of *S. salmonicolor* strains showed that toxin production
occurred both on solid and in liquid media, with killer activity directed
exclusively against closely related species (*S. johnsonii*, *S. microsporus*,
S. holsaticus). The single exception was the susceptibility of a
Leucosporidium species. Introduction of the toxin into a culture medium
results in growth retardation, which resumes after 60 h due, (presumably),
to inactivation of the toxin by proteolytic enzymes. Toxin activity in
frozen culture fluids is retained for several months, but is completely
abolished by heating at 100°C for 10 min, or by protease treatment (trypsin,
chymotrypsin, papaine, *Staph. aureus* protease). Gel filtration data indi-
cate that the killer toxin has a MW of 10 to 30 kdaltons. Figures 1;
references 9: 1 Russian, 8 Western.

[I921-12172]

MOLECULAR BIOLOGY

UDC 577.21

PLASMID TRANSFORMATION OF BACILLUS SUBTILIS: EFFECTS OF INVERTED REPEAT SEQUENCES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 282, No 2, May 85
(manuscript received 27 Nov 84) pp 437-441

BOYTSOV, A.S., KARAMYAN, N.A. and SOLOV'YEVA, I.M., Leningrad Polytechnic
Institute imeni M.I. Kalinin

[Abstract] Previously-published reports that streptococcal plasmids are capable of persistence and stable replication in *Bacillus subtilis* have been linked to the fact that 80% of the genome in the plasmids consists of inverted repeat sequences. To determine whether, in fact, such structural features of plasmid DNA are indeed a factor, comparative studies were conducted on the transformation of *B. subtilis* by several recombinant plasmids with inverted sequences of different size. Evaluation of the transformation data showed that the presence of an inverted duplication in the plasmid does not per se determine vector properties and does not enhance transformation efficiency of monomeric forms. However, such plasmids do appear to possess special determinants, in the case of plasmids pSM22095 and pSM19035, which promote efficient cloning of extensive DNA fragments in *Bacillus subtilis*. The determinants in question seem not to be intact replicators of the streptococcal plasmids; *recE*-independent intramolecular recombination at these sites may lead to a circular monomeric molecule from the linear DNA. In this manner these, or some other determinant sites, may be responsible for the stable inheritance of the recombinant plasmids. Figures 1; references 15: 6 Russian, 9 Western.

[1921-12172]

INHERITANCE OF CENTROMERIC PLASMIDS IN SACCHAROMYCETES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 282, No 2, May 85
(manuscript received 17 Dec 84) pp 450-452

TSULADZE, A.M. and LARIONOV, V.L., Institute of Cytology, USSR Academy of Sciences, Leningrad

[Abstract] Experimental studies were conducted on the mitotic stability of centromere-containing plasmids in saccharomycetes, to test a previously-proposed mathematical model for the behavior of this class of plasmids in transformed yeasts under selective growth conditions [Pirojkov, V., et al., Gene, 28: 237-239, 1984]. In the study, two strains of *Saccharomyces cerevisiae* were employed, subject to transformation by hybrid plasmids RcpCEN3 and R2-CEN3. Both plasmids carry yeast gene LEU2, CEN3 centromeric locus from yeast gene III, and pBR325 sequence. RcpCEN3 contains one replicator, while R2-CEN3 also contains a tandem repeat of the replicator. For the two yeast strains the frequency of plasmid loss was different, but in each case mitotic stability of R2-CEN3 was ca. twice as great as that of RcpCEN3. The experimental results were in excellent agreement with the calculated data. Plasmid loss was evidently predicated on ineffective plasmid replication in the transformed cells, with the frequency of loss for centromeric plasmids present as one copy in the cell equivalent to plasmid loss per generation. Consequently, having estimated the average number of divisions that a yeast cell that has lost its plasmid can undergo, it is possible to estimate the frequency of plasmid loss per generation on the basis of mitotic stability. References 9 (Western).

[I921-12172]

NONIONIZING ELECTROMAGNETIC RADIATION EFFECTS

UDC 616.8-085.847.8(048.8)

USE OF MAGNETIC THERAPY IN CLINICAL NEUROLOGY: LITERATURE REVIEW

Moscow ZHURNAL NEVROPATOLOGII I PSIKHIATRII in Russian Vol 85, No 1, Jan 85
pp 135-140

SHOGAM, I.I., LENCHIN, V.N. and BARANOVSKAYA, A.V.

[Abstract] A literature survey is presented on the current status of magnetic therapy in clinical neurology. It is generally accepted that the high susceptibility of the nervous system to the magnetic field is due to a large extent to the automatic component. Furthermore, it has also become clear that glial cells are far more susceptible to magnetic fields than are neurons. Controversy prevails on the question of whether the therapeutic effectiveness of magnetic fields involves a direct mechanism of action or an indirect one via reflex mechanisms. Nevertheless, effectiveness of magnetic therapy has been demonstrated and generally accepted in cases dealing with lagophthalmia, ptosis, various neuralgia, radiculitis, neuritis, vascular and infectious pathology of the brain, and so forth. Basically, the effectiveness of such therapy is strongly dependent on the location and the nature of the pathologic process, as well as on the functional status of the autonomic nervous system. In view of this, effective magnetic therapy is highly dependent on individualization of a given approach. References 111:
1 Czech, 1 Polish, 87 Russian, 22 Western.

[358-12172]

PHARMACOLOGY AND TOXICOLOGY

UDC 616.5-02:613.632]-075.471

CHAMBERS FOR DETERMINING PENETRATION RATE OF CHEMICAL SUBSTANCES
THROUGH SKIN

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 4, Apr
85 pp 56-57

[Article by O. N. Syrovadko, Labor Hygiene and Occupational Diseases
Institute, USSR Academy of Medical Sciences]

[Text] Considerable attention, with good reason, has recently been given to the skin as an entry path for chemical penetration into the body [2]. Among the various instruments being used for such studies the Fredrikson and Kolpakov diffusion chambers are among the most widely employed. The chambers are intended for the study of fluid chemical substance penetration through isolated human and animal skin as well as through the skin of live animals. The operational principle and apparatus of the two chambers are practically the same. The chamber (apparatus) consists of two receptacles with couplings.

A skin flap is placed between the receptacles which are fastened together by clamps. The upper receptacle is filled by the test solution and is closed by a cap (the Kolpakov chamber) or a glass cover (Fredrikson chamber), and the lower receptacle is filled with physiological solution. After the assigned exposure, the physiological solution is poured out of the receptacle into a test tube, and the amount of substance that penetrated the skin per unit of time is chemically assayed.

Possible errors that may occur in working with these chambers are associated with the vertical position of the receptacles due to the following circumstances:

- 1) The fluid in the upper receptacle may, of its own weight, exert a certain pressure on the skin, whereas this is not the case in the lower receptacle which contains the physiological solution;

2) After the chamber receptacles are filled and closed, the fluid level in the lower receptacle can not be seen which makes it difficult to determine whether or not the fluid has come into contact with the entire surface of the skin specimen.

We therefore made two modifications of the aforementioned chambers.

1. The chamber we propose for assaying the penetration of chemical substances through the skin does not have any shortcomings because of the receptacles' horizontal position and vertical filling tubes in the chambers (Diagram 1).

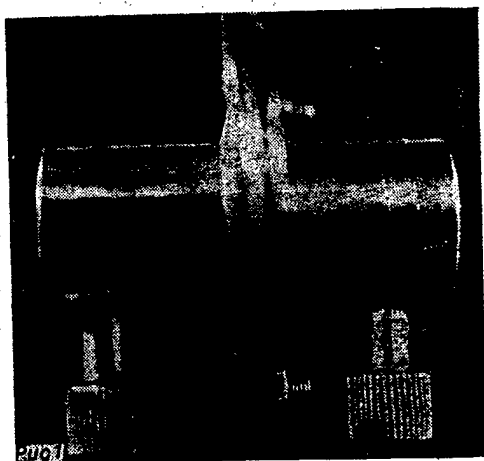


Diagram 1. Chamber for Assaying the Penetration Rate of Substances Through Isolated Skin.

The chemical fluid substance under examination or its solutions and physiological solution are placed into the chambers with a pipet or a syringe through the filling tubes, and not through the face end of the receptacles.

The fluid level in the receptacles can be determined visually from the filling tubes.

Prior to the experiment, the chamber is examined, washed with a solvent, and then washed with running water. Fatty layer tissue and hair are removed from the skin.

The skin flap is placed on the receptacle flange and is stretched so that there are no wrinkles. The second receptacle is positioned from above so that the apertures of the two receptacles coincide. Screws are inserted into the apertures and are evenly tightened. The chamber is placed on a rack horizontally so that the filling tubes of the receptacles are vertical (from above).

The test substance or its solution is injected by a heavy-gage needle syringe or buret through filling tubes into the receptacle to which the outside surface of the skin is turned. Physiological solution is inserted into the other receptacle. The fluid level in the receptacles can be judged by the presence of fluid in the filling tubes.

After the assigned time of exposure, physiological solution is taken by a syringe from the chamber's receptacle and injected into a test tube and chemically analyzed for the amount of the substance under study. The chamber is examined, washed, and dried. The presence of any of the test substance in the physiological solution indicates that it has penetrated the skin.

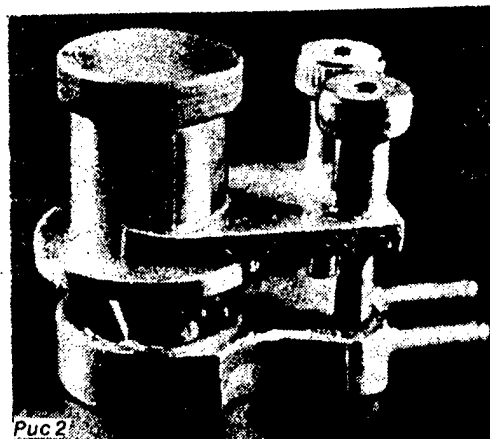


Diagram 2. Chamber for Determining the Penetration Rate of Substances Through the Skin of a Live Laboratory Animal

This chamber may be used to study the penetration of vaporous substances through the skin. In such a case one receptacle is used, and instead of a second receptacle, a membrane with an aperture with the same area as that of the lower receptacle is placed and tightened over the skin. After the chamber is filled with physiological solution, it is placed into a large chamber with the assigned concentration of the substance under study. Following exposure, the amount of the substance in the physiological solution is assayed.

2. A chamber for studying the penetration of chemical substances through the skin of live animals can be used under laboratory conditions for experimental studies on guinea pigs, rats, and other animals (Diagram 2).

F. I. Kolpakov recommends the use of the chamber suggested by him for the study of chemical substance penetration through the skin of live animals [1]. One of the significant shortcomings of this chamber is its large size so that two 10 - 12 cm sections of skin are required in order to introduce the lower receptacle under the skin of the animals.

Our model of the chamber does not have this shortcoming because of the receptacle's lower height, a special clamp for fastening these receptacles, and the lack of flange couplings. Consequently, instead of two long sections of skin, one section 3 - 5 cm in length is sufficient (depending on the size of the lower receptacle). There is a temporary disruption of blood and lymph flow when this chamber as well as Kolpakov's chamber are used.

A section is made in a thoroughly sheared area of the animal's skin. The skin is carefully separated from connective tissues and the lower receptacle of the chamber is introduced subcutaneously. The upper receptacle of the chamber is placed on it from above and is fastened with a clamping device.

Physiological solution is injected through a filling tube into the lower receptacle, and the test substance is injected into the upper receptacle.

When the lower receptacle is being filled it must be tilted so the filling tube is pointed upward and the physiological solution can not spill out of the receptacle.

After the filling tube is closed the chamber is turned around into the operative position (tube in the horizontal position).

The subsequent steps and calculations are the same as taken with the first chamber.

Both chambers are made of stainless steel, and are easily cleaned and washed. They weigh 110 and 120 grams respectively. The weight of the chambers can be reduced by using aluminum or duralumin instead of stainless steel.

The application area and volume of the receptacles can be varied, and the final results are converted to milligrams per $1 \text{ cm}^2 \cdot \text{hr}$ or milligrams per $1 \text{ cm}^2 \cdot \text{min}$.

The application area of the chamber for isolated skin is 4 cm^2 and 4 cm^3 in volume, and 4 and 2 cm^3 respectively for studying penetrability in live animals.

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CSO: 1840/1927

JPRS-UBB-85-022
21 August 1985

UDC 577.352.2:615.919

INTERACTION OF KARA KURT LATRODECTUS TREDECIMGUTTATUS SPIDER VENOM WITH LIPOSOMES

Kiev UKRAINSKIY BIOKHIMICHESKIY ZHURNAL in Russian Vol 57, No 3, May-Jun 85
(manuscript received 26 Nov 84) pp 7-12

TRIKASH, I.O. and LISHKO, V.K., Institute of Biochemistry imeni A. V. Palladin, UkSSR Academy of Sciences, Kiev

[Abstract] Study of interaction of latrotoxin with phospholipid vesicles and its capacity to be incorporated into liposome membrane and to form ion channels is described and discussed. Latrodectus mactans tredecimguttatus venom was dried lyophilically, dissolved in distilled water and centrifuged at 3000 rev/min. The protein level in the supernatant fluid, used in the experiment, was 6 mg/ml. Interaction of the venom with bilayer phospholipid membranes led to formation of ion channels. Change of permeability of the liposomes was judged by input and output of $^{86}\text{Rb}^+$ and $^{45}\text{Ca}^{2+}$. LaCl_3 in 0.5 mM concentration greatly reduces both Rb^+ input and output in the proteoliposomes, which may be used to block latrotoxin channels in experiments with phospholipid vesicles. Study of the electrophoretic spectrum of proteins, bound with liposomes, shows that polypeptide of latrotoxins with molecular mass 130 kDa predominates in the proteoliposomes. Figures 8; references 15: 3 Russian, 12 Western.

[1925-279]

SEA INHABITANTS -- SOURCES OF NEW DRUGS AND BIOLOGICAL PREPARATIONS

Moscow PRIRODA in Russian No 5, May 85 pp 44-52

YELIAKOV, G. B., LYUTSKO, A.M. and STONIK, V. A.

[Abstract] Studies of physiologically active substances derived from sea organisms to be used as precursors for medicinal and biological preparations are relatively new. In the 50's, American and Japanese chemists began synthesizing arabinose containing nucleosides from spongothymidine isolated by W. Bergmann. From Lumbriconereis heteropoda the effective insecticide padon was isolated. Many pharmaceutical firms now subsidize studies of

21 August 1985

microorganisms, plants and animals from the bottom of the sea. A number of novel agents obtained from these sources are listed. Sea pharmacology is one of the leading activities in the Pacific Ocean Institute of Bioorganic Chemistry, Far Eastern Scientific Center, USSR Academy of Sciences, organized in 1964 in Vladivostok by M. M. Shemyakin. This is the only Institute located at the seashore of an ocean. The sea experimental station in the Troytsa Bay supports all these activities. Japanese bays are known for their rich fauna and flora. One of the first agents studied was the "sea ginseng" *Stichopus Japonicus*, leading to isolation of triterpene glycosides. Interesting studies are under way on pigments from echinoidae, asteroidae and halothurioidae. Figures 12, references 4: 1 Russian, 3 Western.

[I924-7813]

UDC 591.145.2+591.145.3

ISOLATION AND DESCRIPTION OF SPIDER SEGESTRIA FLORENTINA VENOM

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 282, No 2, May 85 (manuscript received 21 Dec 84) pp 463-465

SAGDIYEV, N.Zh., SADYKOV, A. A., USMANOV, P.B., KALIKULOV, D., TASHMUKHAMEDOV, B.A. and SADYKOV, A.S., academician, Institutes of Bioorganic Chemistry and of Biochemistry, Uzbek SSR Academy of Sciences, Tashkent

[Abstract] Standard techniques of protein chemistry were employed in the isolation and characterization of the venom of the spider *Segestria florentina*. A combination of gel chromatography, ion-exchange chromatography and polyacrylamide gel electrophoresis led to the isolation of a 5800 dalton protein as the active principle in the venomous mixture. Further analysis showed the protein has a pI of 4.75 and an N-terminal Arg. In analogy to scorpion toxins, the venom isolated from *S. florentina* was particularly rich in Glu, Asp, Lys, Cys, and His. Based on preliminary observation, *S. florentina* venom may become a useful reagent in studies on sodium channels. Figures 3; references 9: 2 Russian, 7 Western.

[I921-12172]

PHYSIOLOGY

UDC 616-001.12:616.001.186:612.123

EFFECT OF EXTREME FACTORS AND ADAPTATION TO ALPINE CONDITIONS ON INDICATORS
OF PEROXIDE OXIDATION OF BLOOD SERUM LIPIDS

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian Vol 57, No 3, May-Jun 85
(manuscript received 21 Nov 84) pp 78-80

SUTKOVOY, D.A., BARABOY, V.A., KATKOV, A.Yu., OREL, V.E. and PALYUKH, A.R.,
Institute of Physiology imeni A. A. Bogomoletz, UkSSR Academy of Sciences,
Kiev

[Abstract] Study of the effect of adaptation to alpine conditions on changes of peroxide oxidation of blood serum lipids included 3 series of experiments with trained, healthy males ranging in age from 33 up to 71 years, who were subjected to low temperature (-15°C), high temperature ($+100^{\circ}\text{C}$) and a combination of these temperatures with acute hypoxia (simulation of an altitude of 5600 m). One series tested the effect of heavy physical exercise on unadapted subjects, one series tested the effect of physical exercise combined with a special low-calorie diet and one tested the effect of -50°C combined with a simulated altitude of 7500 m for 30 minutes. Subjects experienced a 10-30 percent blood serum malonic dialdehyde concentration increase under the effects of the temperatures studied and after combination of them with acute hypoxia with the maximum increase occurring at $+100^{\circ}\text{C}$ and a simulated altitude of 5600 m. Unadapted subjects experienced a 46-70 percent increase in blood serum spontaneous chemoluminescence. Adaptation to alpine conditions combined with physical exercises and low-calorie diets reduced shifts of these indicators. It was assumed that extreme temperatures and combination of them with acute hypoxia is readily tolerated by well-trained subjects and adaptation to alpine conditions greatly increases resistance of the body to hypoxia and heightens tolerance of extreme conditions, thus moderating the stress syndrome. References: 8 (Russian).

[I925-279I]

UDC 612.88+612.825+612.8.012+612.8.015

CORTICAL LEVELS OF NEUROPEPTIDES AND THEIR CENTRAL ACTIVITIES

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI in Russian Vol 35, No 2 Mar-Apr 85 (manuscript received 10 Aug 84) pp 211-221

ASHMARIN, I.P. and OBUKHOVA, M.F., Institute of Normal Physiology imeni P.K. Anokhin, USSR Academy of Sciences, Moscow

[Abstract] Recent developments in brain chemistry have shown considerable differences in the levels of the various neuropeptides in the different brain structures. Thus, for example, cholecystokinin is present in relatively high levels in the cortical tissues of man and the white rat, but absent or present in low levels in the other brain formations, including the hypothalamus which generally has high levels of neuropeptides. A review of the literature on the levels of the different peptides in the human and white rat cortex, vis-a-vis levels in other brain formations, indicates that such peptides (enkephalins, vasopressin, cholecystokinin, delta-sleep inducing protein, bombesin, etc.) suggests that they may have unique and distinct regulatory roles in the cortex. A full correlation between levels and functional characteristics will require very intensive research efforts in view of the relative neglect to date of cortical brain chemistry of the neuropeptides. References 68: 4 Russian, 64 Western.

[357-12172]

UDC 612.821.6+612.821.7+612.822.3

STUDIES ON EEG AND EMG INDICATORS OF PERCEPTION AND POSSIBLE INFORMATION TRANSFER FROM STAGE 2 TO REM SLEEP

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI in Russian Vol 35, No 2, Mar-Apr 85 (manuscript received 23 Apr 84) pp 228-231

ARONS, Ye.K., VASIL'YEVA, V.M. and TIUNOVA, A.A., Chair of Physiology of Higher Nervous Activity, Moscow State University imeni V.M. Lomonosov

[Abstract] In order to determine whether information transfer is possible from one stage of sleep to another, EEC, EMG and EOG monitoring was conducted on seven 17-25 year old subjects in whom a conditioned motor response was developed during stage 2 sleep to 1-sec conditioned sound stimulus (150 Hz, 25 dB above threshold) and vocal command reinforcement (unconditioned stimulus). Testing of information transfer from stage 2 sleep to REM stage was conducted by presentation of the conditioned stimulus only during the latter stage. Analysis of the electrophysiologic and motor data demonstrated that information transfer from stage 2 to REM sleep was complete, i.e., that no putative 'barrier' exists between the two stages. This finding contradicts other testing procedures that claim interference with information transfer from slow-wave to rapid-wave sleep. Figures 1; references 14: 3 Russian, 11 Western.

[357-12172]

AUTOMATED VOICE RECOGNITION: REVIEW OF PROBLEM

JPRS-UBB-85-022
21 August 1985

Moscow PSIKHOLOGICHESKIY ZHURNAL in Russian Vol 6, No 1, Jan-Feb 85
pp 140-148

ZAGORUYKO, N.G.

[Abstract] A review is presented of the various approaches taken to the creation of automated voice recognition systems, based on analysis of sound signal frequency, intensity, and time. Basically, a computer-based system relies on a frequency analyzer, feature extractor, sequential feature storage and a word categorizer. While previous efforts involved analog systems, at the present time most such analytical systems rely on digital analysis. Despite the seeming advances, problems remain that beset the technology currently in use. Thus, for instance, there are still no satisfactory solutions to differentiation of the "voice-pause-noise" pattern. For speech recognition several systems utilize a priori dictionaries of permissible word combinations, in order to construct syntactically meaningful sequences. Although it is self-evident that the present state of science in the field of automated voice recognition is in its infancy, the progress to date shows that advances are being made in an exponential manner. References 43: 33 Russian, 10 Western.

[351-12172]

UDC 612.821.6+612.014.46

"NONCLASSICAL" EFFECTS OF LULEBERIN (LH-RH) THAT CONFIRM PLEIOTROPY OF NEUROPEPTIDES

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI in Russian Vol 35, No 1, Jan-Feb 85 (manuscript received 7 Feb 83) pp 164-169

BAKHAREV, V. D., YESIPOV, A. S., BUROV, S. V., PAPSUYEVICH, O.S. and CHIPENS, G.I., Leningrad

[Abstract] In recent years research has established the presence of psychotropic properties in hypothalamic and pituitary hormones. The present article reports on study of the releasing action of luleberine (LH-RH), whose classical effects are to stimulate gonadotropic hormones. After being administered the hormone test, white rats were put into a Y-shaped labyrinth and also tested for anticonvulsive and analgesic reactions. The conditioning signal for the maze was a light, while the non-conditioning stimulus was an electric shock through the floor. Anti-convulsant effect was tested by administering corasol 15 minutes after the hormone was given; analgesic effect was determined on the basis of reactions to a shock at the base of the tail. Dosage was 150 mcg/kg of body weight, which had no impact on spontaneous motor activity. Results showed a positive impact on learning in the labyrinth and on memory, as well as reduction of convulsive response and positive analgesic effects. Thus the experiments confirmed the

multichanneled function of LH-RH, its pleiotropy. Analogs of LH-RH had none of these positive effects, and often caused opposite undesirable effects. Figures 2; references 12: 2 Russian, 10 Western.

[349-12131]

ABILITY TO REGISTER MEMORY

Moscow PSIKHOLOGICHESKIY ZHURNAL in Russian Vol 6, No 2, Mar-Apr 85 pp 114-117

GERASIMOV, A. I., ABRAMOV, A. V., PODGORNYY, S. A. and RADIONOV, V. A.

[Abstract] In an attempt to test information assimilated by the brain and expressed as short and long term memory, an apparatus was developed called "Pamyat'" (Memory) which made it possible to evaluate the status of CNS, i.e., the ability of the brain to reflect in a short period the "command" of the experimenter. Repeated tests prior to a work-day or some specific physical exertion serve as a base line; a second test run is performed after the exertion (for example at the end of a working day) yielding data for practical analysis and conclusions. The long- and short term memory of healthy people is a function of the influence of environment, emotional status of an individual, the intellectual level, etc., -- all highly individualized characteristics. Therefore, an individualistic approach must be taken to determine the state of one's brain. This new apparatus was claimed to be such an instrument. Figure 1.

[347-7813]

SPONTANEOUS CHANGES OF EMOTIONAL STATE UNDER CONDITIONS OF MONOTONY AND DECADESECOND RHYTHMS OF BRAIN POTENTIALS

Moscow PSIKHOLOGICHESKIY ZHURNAL in Russian Vol 6, No 2, Mar-Apr 85
(manuscript received 19 Jul 83) pp 105-113

ALADZHALOVA, N. A. and KVASOVETS, S. V., Institute of Psychology, USSR Academy of Sciences

[Abstract] During monotonous work, there occur short shifts in the emotional state of the performer. A shift towards the positive emotion alternates about every 20 minutes with one of a negative emotion. Parallel with the emotional state shift, the quality of performance of various tasks is altered and in some brain cortex areas decasecond vibrations of biopotentials are noted. The appearance of decasecond potentials in the left hemisphere is correlated with a tendency to shift the emotional state to the negative side; decasecond potentials in the right hemisphere correlate with positive emotional states. The participation of hemispheres in spontaneously occurring emotional states is reflected by the dynamics of these decasecond potentials in the left and right hemispheres. Figures 3; references 17: 14 Russian, 3 Western.

[347-7813]

EFFECT OF UNILATERAL DISTURBANCE OF AUDITORY PERCEPTION ON ABILITY OF BATS TO DETERMINE DIRECTION OF ADEQUATE ULTRASOUND SIGNALS

Moscow ZHURNAL VYSSHEY NERVNOY DEYATEL'NOSTI in Russian Vol 35, No 1, Jan-Feb 85 (manuscript received 11 Mar 84) pp 173-175

GORLINSKIY, I. A., Physiological Institute imeni A. A. Ukhtomskiy of the Leningrad State University imeni A. A. Zhdanov

[Abstract] Binaural functioning of the auditory system is regarded as the key to spatial orientation in animals and humans, but some studies have shown monaural perception to be fairly effective in a horizontal plane and nearly the same as binaural hearing in the vertical plane. The present article reports on gradual limitation of hearing in *Rhinolophus ferrumequinum* and *Myotis oxygnathus*. The former were conditioned to fly to an ultrasound source, while the latter were trained to run to it. After conditioning was achieved, the hearing of the bats was gradually hampered, first by breaking the ear drum, then by removing the bones of the inner ear and finally by pouring wax into the ear canal. Results showed that with the first two procedures, the ability to find the sound source was temporarily suppressed, but returned after 2-3 days, for the first operation, and 4-6 for the second. In the wax experiment, the *R. ferrumequinum* could not recover the sound discerning ability until the wax was removed, but the *M. oxygnathus* recovered a crude ability in both planes. Figures 2; references 5: 3 Russian, 2 Western.

[349-12131]

MODULATING EFFECTS OF MET-ENKEPHALIN IN GLUTAMINERGIC TRANSMISSION IN RATS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 282, No 2, May 85 (manuscript received 26 Sep 84) pp 456-459

KUZNETSOV, V.I. and GODUKHIN, O.V., Institute of Biological Physics, USSR Academy of Sciences, Pushchino, Moscow Oblast

[Abstract] Electrophysiologic and microionophoretic studies were conducted on neostriatal neurons of Wistar rats to determine the effects of met-enkephalin on glutaminergic transmission, in view of the uncertainty regarding the mechanism of action of endogenous opioids on the glutaminergic pathways. Parallel experiments demonstrated that met-enkephalin diminished ³H-glutamate-induced discharges in 22 out of 44 neostriatal neurons (from 4.6 to 1.2 pulses/10 sec), and inhibited in a noncompetitive manner the binding of glutamate to membranes isolated from the striatum. Met-enkephalin had no effect on the binding affinity of glutamate for its receptors, and the action of the opioid was not affected by naloxone. The data indicate that the inhibitory effects of met-enkephalin on the action of

glutamate in the neostriatal system are due to inhibition of glutamate binding to the postsynaptic receptors, and appears to be mediated via direct receptor-receptor interactions. Figures 2; references 7: 1 Russian, 6 Western.

[1921-12172]

UDC 591.185.5:599.423

MORPHOLOGIC AND FUNCTIONAL CHARACTERISTICS OF RETICULAR FORMATION NEURONS OF RHINOLOPUS FERRUM EQUINUM BATS RESPONSIVE TO ACOUSTIC STIMULATION

Leningrad ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII in Russian Vol 21, No 1, Jan-Feb 85 (manuscript received 9 Jun 83) pp 44-48

ANDREYEVA, N. G. and ZHARSKAYA, V. D., Physiological Institute imeni A. A. Ukhtomskiy, Leningrad University

[Abstract] The goal of this work was to study the reactions of reticular formation (RF) and the characteristics of RF neurons in bats exposed to impulses from specific acoustic formations. The experiments were carried out on 10 large bats. Electric activity was registered with a glass microelectrode filled with 15% aqueous solution of horse-radish peroxidase (HRP). Analysis of the data on retrograde transport of this enzyme showed existence of projections from the superior olivary complex, from the neutral nucleus of lateral lemniscus and from the calluculus inferior to the nucleus reticularis pontis oralis (NRPO). It was concluded that RF, and especially the NRPO plays an important role in transmission of specific sensory impulse generation towards other brain structures, first of all towards the motor structures. Figure 1; references 12: 5 Russian, 7 Western.

[342-7813]

PUBLIC HEALTH

UDC 616-084.3(47+57-22)

ANNUAL MEDICAL EXAMINATIONS FOR RURAL POPULATION

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 4, Apr 85 (manuscript received 5 Dec 84) pp 10-15

[Article by A. G. Safonov, USSR deputy minister of health, under the rubric "Preventive Care and Annual Medical Examinations": "Ways of Providing the Rural Population with Annual Medical Examinations"]

[Text] As a result of the constant concern of the Communist Party and the Soviet Government for the development of agriculture, improving the living conditions and health care provided to people employed in this sector, some serious changes have taken place in agricultural production. The work performed by sovkhoz and kolkhoz farmers has become a form of industrial labor, the distinctions between urban and rural areas are fading, and differences between the culture, education, and medical services among city and rural residents are being eliminated.

In recent years substantial changes have taken place in the organization, volume, and quality of medical care provided to the rural population.

Thanks to measures taken to develop and enlarge central rayon hospitals and to develop a network of inter-rayon specialized medical units, there has been a significant increase in the specialized medical care available to the rural population.

The capacity of central rayon hospitals has almost doubled in the past 20 years, and has reached an average of 284 beds for rayon hospitals located in rayons with a city rayon center, and 176 beds for rayon hospitals in rural areas. There has also been an increase in the capacity of rural district, oblast, kray, and republic hospitals, which has made it possible to almost double hospitalization of rural residents in these medical institutions staffed with highly skilled personnel.

Table 1 contains data on the capacity of rural hospitals that provide direct medical care to the rural population.

The number of hospital beds for every 10,000 rural residents between 1965 and 1983 (including the use of the city hospital network) increased from 77.3 to 126.9 (table 2).

There was a significant improvement in the utilization of beds in all hospital institutions serving rural residents. Certain changes took place in the volume and quality of out-patient medical care provided to the rural population, especially in recent years.

Table 1. Increase in the Capacity of Hospitals Serving Rural Residents

Больницы (1)	(2) Средняя коечная мощность					
	1965 г.	1970 г.	1975 г.	1980 г.	1982 г.	1983 г.
Областные (3)	512	597	715	790	823	834
ЦРБ городские (4)	148	186	230	268	279	284
ЦРБ сельские (5)	92	117	144	166	174	176
Участковые (6)	27	30	33	35	36	36

Key:

- | | |
|-------------------------|---|
| 1. Type of hospital | 4. Central rayon hospitals located in towns |
| 2. Average bed capacity | 5. Central rayon hospitals located in rural areas |
| 3. Oblast | 6. District <u>Uchasbok</u> |

Between 1980 and 1983 the number of independent out-patient clinics in rural areas increased by 1561, and the number of medical staff positions at these clinics increased by 4411, which made it possible to achieve a gradual increase in the number of physicians working at out-patient clinics (table 3). There was an improvement in how out-patient clinics were staffed with physicians.

The development of out-patient clinics, expansion of polyclinics at central rayon hospitals, and an increase in the number of physicians working at these institutions meant significant improvements in the availability of out-patient medical care for the rural population. The number of visits to various types of physicians increased from 2.8 per rural resident in 1965 to 6.1 in 1983 (table 4). Every year between 16,000 and 16,500 graduates of medical schools were sent to work at rural medical treatment and prevention institutions, and as a result there was a substantial increase in the number of physicians in all different areas of specialization available to the rural population. The number of physicians for every 10,000 rural residents (including the use of city medical institutions) rose from 13.8 in 1965 to 26.8 in 1983. The significant new stimulus for the development and improvement of medical care for the rural population was the result of decisions of the May (1982) Plenum of the CPSU Central Committee, implementation of the Food Program, and the development of agro-industrial complexes.

Table 2. Hospital Beds per 10,000 Rural Residents (Including Use of the City Hospital Network)

Республика (1)	1965 г.	1970 г.	1975 г.	1980 г.	1982 г.	1983 г.	Прирост числа коек в 1983 г. к уровню 1965 г., % (2)
СССР (3)	77,3	91,9	109,4	119,6	124,0	126,9	64,2
РСФСР (4)	87,6	96,2	117,8	129,8	135,6	139,0	58,6
УССР (5)	73,8	87,1	107,2	118,3	123,2	126,9	72,0
БССР (6)	80,5	91,8	112,8	127,1	132,2	135,7	68,6
Узбекская ССР (7)	77,0	86,5	92,8	107,3	111,7	115,1	49,5
Казахская ССР (8)	88,1	108,2	117,9	124,6	129,3	131,1	48,8
Грузинская ССР (9)	73,1	79,6	93,7	101,3	100,4	100,7	37,8
Азербайджанская ССР (10)	67,4	79,2	90,1	94,9	94,8	96,0	42,4
Литовская ССР (11)	71,1	87,1	107,6	116,1	118,0	121,9	71,4
Молдавская ССР (12)	78,3	84,7	100,5	114,3	117,7	122,1	55,9
Латвийская ССР (13)	92,6	94,9	121,3	132,5	132,9	134,1	44,8
Киргизская ССР (14)	70,0	87,1	99,5	103,7	105,8	106,7	52,4
Таджикская ССР (15)	64,1	70,2	76,1	82,4	87,9	91,4	42,6
Армянская ССР (16)	69,4	77,2	87,0	81,9	84,3	83,1	19,7
Туркменская ССР (17)	61,3	74,1	83,9	88,8	92,2	91,1	48,6
Эстонская ССР (18)	101,9	105,5	117,3	126,8	127,5	128,8	26,4

Key:

- | | |
|---|--------------------|
| 1. Republic | 9. Georgian SSR |
| 2. Increase in the number of
hospital beds between 1965
and 1983 (in percent) | 10. Azerbaijan SSR |
| 3. USSR | 11. Lithuanian SSR |
| 4. RSFSR | 12. Moldavian SSR |
| 5. Ukrainian SSR | 13. Latvian SSR |
| 6. Belorussian SSR | 14. Kirghiz SSR |
| 7. Uzbek SSR | 15. Tajik SSR |
| 8. Kazakh SSR | 16. Armenian SSR |
| | 17. Turkmen SSR |
| | 18. Estonian SSR |

Carrying out the decisions of the May (1982) Plenum of the CPSU Central Committee, health care organs, under the guidance of party and soviet organizations and with the active participation of organizations under the ministries of agriculture, the fruit and vegetable industry, and land reclamation and water resources, have taken steps to expand the network of out-patient clinics and mobile types of medical service, which made it possible to meet the primary goal of improving medical care and bringing it as close to the rural population as possible. Between 1982 and 1984 alone approximately 1400 out-patient clinics were organized, many of which are operating in buildings built especially for them. This work was particularly active in the RSFSR, and the Ukrainian, Uzbek, and Lithuanian union republics.

In the past five years a great deal has been done to organize first aid stations (units) in rural rayons and to equip them with cross-country vehicles.

Table 3. Development of the Network of Out-Patient Clinics [Ambulatoriya]

Республика (1)	Число участковых (2) амбулаторий				Число штатных врачебных (3) должностей в них				Число штатных врачебных должностей на 1 учреж- (4) дение			
	1980 г.	1981 г.	1982 г.	1983 г.	1980 г.	1981 г.	1982 г.	1983 г.	1980 г.	1981 г.	1982 г.	1983 г.
СССР (5)	4956	5346	5888	6517	11 626	12 833	14 373	16 037	2,3	2,4	2,4	2,5
РСФСР (6)	1278	1321	1391	1577	2 436	2 575	2 814	3 043	1,9	1,9	2,0	1,9
УССР (7)	966	1024	1116	1198	2 554	2 756	3 095	3 380	2,6	2,7	2,8	2,8
БССР (8)	204	201	201	213	385	383	397	435	1,9	1,9	2,0	2,0
Узбекская ССР (9)	513	648	769	848	1 893	2 305	2 648	3 090	3,7	3,6	3,4	3,6
Казахская ССР (10)	415	496	594	680	738	891	1 109	1 251	1,8	1,8	1,9	1,8
Грузинская ССР (11)	643	650	653	661	1 370	1 424	1 460	1 540	2,1	2,2	2,2	2,3
Азербайджанская ССР (12)	134	170	240	317	214	282	463	624	1,6	1,7	1,9	2,0
Литовская ССР (13)	154	158	158	159	471	510	518	526	3,1	3,2	3,3	3,3
Молдавская ССР (14)	101	103	110	115	365	385	403	428	3,6	3,7	3,7	3,7
Латвийская ССР (15)	103	102	103	102	205	208	212	216	2,0	2,0	2,1	2,1
Киргизская ССР (16)	36	38	53	66	104	118	168	225	2,9	3,1	3,2	3,4
Таджикская ССР (17)	26	139	173	209	333	395	421	528	2,6	2,8	2,4	2,5
Армянская ССР (18)	178	179	182	184	335	347	350	350	1,9	1,9	1,9	1,9
Туркменская ССР (19)	37	47	69	107	96	117	165	240	2,6	2,5	2,4	2,2
Эстонская ССР (20)	68	70	76	81	127	137	150	161	1,9	2,0	2,0	2,0

Key:

- | | |
|--|--------------------|
| 1. Republic | 10. Kazakh SSR |
| 2. Number of district out-patient clinics | 12. Georgian SSR |
| 3. Total number of medical staff positions | 13. Azerbaijan SSR |
| 4. Number of medical staff positions per institution | 14. Lithuanian SSR |
| 5. USSR | 15. Moldavian SSR |
| 6. RSFSR | 16. Latvian SSR |
| 7. Ukrainian SSR | 17. Kirghiz SSR |
| 8. Belorussian SSR | 18. Tajik SSR |
| 9. Uzbek SSR | 19. Armenian SSR |
| | 20. Turkmen SSR |
| | 21. Estonian SSR |

The development of the network of out-patient clinics, growth in the capacity of central rayon hospitals and rural district hospitals, and the increase in the number of mobile types of medical care have made it possible not only to expand the volume and improve the quality of medical care provided to the rural population, but also to carry out extensive measures aimed at early detection of diseases, dynamic observation of patients, and planned treatment.

Every year over 7 million people (including sovkhos workers, kolkhoz farmers, and agricultural equipment and supply workers) are given preventive medical examinations. Of those examined, every year 2.5-3.0 million people undergo clinical observation. In 1983 almost 11 million adult rural residents underwent clinical observation.

Table 4. Number of Visits to Physicians in Different Areas of Specialization at Out-Patient and Polyclinic Institutions per Rural Resident per Year

Республика (1)	1965 г.	1970 г.	1975 г.	1980 г.	1982 г.	1983 г.
СССР (2)	2,8	3,4	4,2	5,3	5,8	6,1
РСФСР (3)	2,8	3,3	4,2	5,0	5,4	5,7
УССР (4)	3,2	3,9	4,6	6,2	6,9	7,2
БССР (5)	3,1	3,7	4,7	5,6	5,9	6,0
Узбекская ССР (6)	2,1	2,6	3,9	5,5	6,0	6,2
Казахская ССР (7)	2,3	2,7	3,7	5,0	5,7	6,1
Грузинская ССР (8)	3,9	4,6	4,6	5,3	5,6	5,6
Азербайджанская ССР (9)	2,1	2,2	2,9	4,2	5,0	5,3
Литовская ССР (10)	3,4	4,7	6,1	7,8	8,5	8,8
Молдавская ССР (11)	2,1	2,7	3,5	4,9	5,9	6,1
Латвийская ССР (12)	4,1	4,5	5,3	6,6	6,9	7,0
Киргизская ССР (13)	3,1	3,2	3,9	4,6	5,1	5,2
Таджикская ССР (14)	1,3	1,8	2,8	3,8	4,3	4,6
Армянская ССР (15)	2,7	3,7	4,6	5,5	5,6	6,0
Туркменская ССР (16)	2,3	2,9	3,4	4,2	4,6	4,8
Эстонская ССР (17)	4,0	4,7	5,6	6,7	6,8	7,1

Key:

- | | |
|--------------------|--------------------|
| 1. Republic | 10. Lithuanian SSR |
| 2. USSR | 11. Moldavian SSR |
| 3. RSFSR | 12. Latvian SSR |
| 4. Ukrainian SSR | 13. Kirghiz SSR |
| 5. Belorussian SSR | 14. Tajik SSR |
| 6. Uzbek SSR | 15. Armenian SSR |
| 7. Kazakh SSR | 16. Turkmen SSR |
| 8. Georgian SSR | 17. Estonian SSR |
| 9. Azerbaijan SSR | |

The June (1983) Plenum of the CPSU Central Committee set a goal of immense political and social importance--to initiate annual preventive medical examinations for the entire population. Fulfillment of this goal will require serious reorganization of the activities of health care organs and institutions, maximum utilization of material, technical, and manpower resources in health care, active participation by local party, soviet, and trade union organizations, the community and the population, an increase in their activities, and deliberate participation in the health center system.

Taking these circumstances into account, a systematic effort should be made to explain the goals and tasks of this system to the public using the mass media, including the press, radio, movies, and television.

The necessary conditions have been created in the country for making the transition to a qualitatively new, important stage in health care for the public and in the development of national health care--the introduction of annual preventive medical examinations for the entire population. These

conditions were created on the basis of the contemporary level of development in Soviet society, a substantial material and technical base, and the availability of manpower resources in the health care field. The introduction of annual preventive medical exams for the entire population will make it possible to constantly monitor the health of the population and to have an active influence on the status of the people's health, since annual medical examinations are aimed primarily at preventing disease, strengthening the health of each member of society, preserving the country's manpower resources, and harmonious development of the younger generation.

In dealing with annual medical examinations from these positions, health care organs should make maximum use of available manpower, material, technical, and scientific resources.

In order to fully implement the universal medical examination program within the given time limits and to increase its effectiveness, it was necessary to develop a scientifically based system for organizing the program so that it would be carried out in stages.

The USSR Ministry of Health worked out a comprehensive program for implementation of the annual medical examination system that outlines its organizational, methodological, personnel, material, and technical aspects, preparation of the necessary medical documents, and the performance of extensive experimental work to verify the ability of the existing health care system to carry out universal annual preventive examinations in cities and rural areas and at industrial enterprises.

This program calls for medical examinations on an unprecedented scale. The system of annual universal medical examinations exceeds all the measures in this area carried out in the past by health care organs and institutions. The task is to evaluate the health status of every individual as a whole on the basis of an examination of his organs and bodily systems. The first stage of the program--annual preventive examinations for the entire population--is an extensive program aimed at early detection of diseases, especially those diseases that are widespread and do the most damage to a person's health and impair his ability to work. In addition to the examination of each person by specialists--general practitioners, pediatricians, obstetrician-gynecologists, surgeons, and stomatologists--the plan calls for examinations using special testing equipment, instruments, and laboratory studies.

As the data presented here indicate, this is an all-encompassing program involving the comprehensive examination and observation of the health status of each individual from birth to old age.

Thus, annual medical examinations will make it possible not only to detect diseases at their earliest stages, but also to monitor and correct the health of each individual.

It is absolutely clear that there are substantial differences in the conditions and opportunities for conducting annual medical examinations of the entire population in cities and rural areas, at industrial enterprises, pre-schools, schools, and other organized collectives. Even with a single

system and single program for annual medical examinations there will certainly be some differences in how these operations are carried out.

The most complicated problem involves implementation of the universal medical examination system among the rural population.

As indicated above, despite significant expansion of the network of rural hospitals and out-patient clinics and an improvement in the number of medical personnel available to the rural population, the level of medical care, especially out-patient and polyclinic services, still does not fully meet the demands and falls significantly short of the level of care in urban areas.

The rural population is scattered over a wide area in a large number of settlements that are separated by large distances. In contrast, cities have large industrial enterprises, organizations, establishments, and educational institutions in which large numbers of people are concentrated, which naturally makes it easier to carry out the annual medical examination program and makes it possible for physicians and middle-level medical personnel to perform their duties in a shorter amount of time.

The system for organizing annual medical examinations for the entire rural population and the methods for implementing the program should be as flexible and varied as possible.

According to preliminary estimates, approximately 85 million rural residents will undergo annual medical examinations. It is obvious that rural medical and preventive care institutions alone, using just their own resources and staff, will not be able to carry out this volume of work. At the first stage, that is, between 1985 and 1987, city and oblast (krai and republic) health care institutions should help them by sending pediatricians, obstetrician-gynecologists, and surgeons. Maximum use should be made of the resources of central rayon hospitals and mobile types of medical care: fluorographic and stomatological facilities, out-patient clinics, clinical and diagnostic laboratories, all the reserves of rural district hospitals and out-patient clinics, and personnel at midwife-obstetrical centers.

Thanks to the general practitioners, pediatricians, obstetrician-gynecologists, surgeons, and stomatologists being sent to work in rural areas and more intensive development of the network of out-patient clinics between 1985 and 1987, the number of physicians per capita will reach a level that will make it possible for rural treatment and prevention institutions to provide annual medical examinations for the rural populations using mainly their own resources and staff.

An important factor that should be taken into account is the seasonal nature of providing medical examinations to the rural population. While medical examinations in cities are carried out according to a planned, regular schedule over the course of the whole year, in rural areas a significant portion of the working population, including machinery operators, animal husbandry workers, and workers in field brigades, need to receive their medical examinations in the fall and winter, which means that during this same period not only the medical examinations must be conducted, but also check-ups on diseases that

have been detected, and planned therapeutic measures. One must also take into account the fact that after medical examinations of the rural population have been performed, the volume of work to check up on diseases that have been detected, enter them on the medical records, and carry out planned therapeutic measures will be greater in rural treatment and preventive care institutions than in the cities. This is due to the fact that at urban medical institutions considerably more patients are already under observation.

It will also be more difficult to organize the medical examination program in rural areas and to get people to the medical clinics where the primary examinations will be set up. A great deal of explanatory work will have to be done, and specific assistance will be required on the part of kolkhoz and sovkhoz managers, and the general public. The rural intelligentsia (teachers, agronomists, veterinary specialists, and engineers) should be included in this work.

All these factors should be taken into account by health care organs in preparing and carrying out annual medical examinations among the rural population.

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CSO: 1840/354

NEWSPAPER READERS' SUGGESTIONS FOR IMPROVED HOSPITAL CARE.

Moscow PRAVDA in Russian 31 May 85 p 3

[Article by O. Frantsen, under the rubric "All Over The Land Of The Soviets":
"For Health--Without A Queue: A Survey Of Mail Received On The Article
'Surgeon At A Standstill'"]

[Text] Each of us ends up in the hospital at one time or another. If we ourselves are not lying there, we are visiting people close to us. Everyone is familiar with impatiently awaiting an order: to get out of here sooner and return to a normal life. It is not surprising that the controversial and pointed article by writer-physician Yu. Krelin "Surgeon At A Standstill", published last year in PRAVDA on 2 December evoked lively interest on the part of readers.

Adding to what the author said and taking exception to it in some things, readers decidedly support the main idea: it is possible and necessary to raise the "throughput" of hospitals, enhancing the quality of treatment in this way.

P. Poshochenkov from Stavropol recalls that he was hospitalized without test results. Five to seven days elapsed during various tests at the hospital, and it was only after this that the question of his surgery was decided. And once it was observed that he needed to be in a different department altogether than the one he had first been placed in!

As a matter of fact, a person in this situation is occupying hospital space in vain, putting the state to unjustified expense and subjecting himself to suffering in unfamiliar surroundings. Were he to undergo comprehensive testing before hospitalization (not, of course, in case of an emergency, when there is no time for this) his stay in the hospital would prove to be shorter and less costly.

Of course, the interests of the patient should not suffer in any way, notes A. Gerasimov from Kiev. It is no secret that an examination at the polyclinic often turns into a troublesome affair, as well as a long and inconvenient one, particularly if the patient is not on sick leave. Visits to the required offices stretch into many days, and are scheduled so that it is complicated to fit them in with work. Thus it becomes necessary to ask for leave. "We

were not accustomed to considering lost work time for the person being examined," states M. Sabirov from Bashkir Medical Institute.

Preparation of patients for hospitalization must be organized in such a way as not to interrupt their work. If this is impossible for whatever reasons, doesn't it make sense to give them sick leave on another day and see to it that they will be able to quickly visit all the offices? State expenses for this will still be less than for in-hospital examination. M. Sabirov stipulates that we must consider that many outpatient-polyclinic institutions, particularly in a rural locale, are in no position today to carry out an entire complex of modern tests. Until they find an adequate material-technical base, a significant portion of this work must be left primarily to hospitals. The result in this case, however, is not all bad. It is not at all necessary for a patient to occupy a hospital bed during the examination. If it cannot be managed in a day, and the person is too far from home, he can be put up in a hotel or private quarters. Similar diagnosis centers (both for hospitals and independents) can serve certain polyclinics or outpatient clinics, having taken it upon themselves to do the complicated testing.

I. Demidov from Lytkarin, Moscow Oblast, notes with reason that it is not enough to conduct an examination--its reliability must be guaranteed. A participant in the Great Patriotic War, he writes bitterly about the fact that he has observed many times with his own eyes multiple tests attached to an order; they are perceived at the hospital as papers that no one needs. Everything is done over here. Of course, it happens that tests need to be repeated or that new ones need to be done, but these are exceptional cases, and even then it doesn't make sense to nullify the work that has already been done by one's colleagues. Why does this happen this way?

The author of the letter explains that consequently someone else's data is not always trusted at the hospital and it is considered to be all right to duplicate it. Unfortunately, sometimes the polyclinics provide the basis for such lack of trust. In addition to being equipped from a material-technical standpoint, the skill and responsibility of the staff must be persistently improved. Results of an examination must be a document evoking full trust.

Modern medicine even makes it possible to perform surgical operations that are not too complicated on an outpatient basis. What is the result of this? Basically being at home, in surroundings that are familiar to him, the patient does not experience the emotional stress that develops in the hospital. There is no threat of in-hospital infection. Treatment is less costly and its quality is not lowered--it may even be better.

Clearly, extensive use of this resource demands a number of organizational measures. As readers write, the first thing that must be done is to reduce the burden in the polyclinics on specialists who will perform complex treatment. Otherwise, they will not be able to guarantee that their work will be high quality. In other words, there must be more of such specialists. This is more advantageous than expanding the number of hospital beds, and it is more comfortable for patients.

The readers gave a great deal of attention to the organization of therapeutic work in hospitals themselves. Yu. Krasnoperov, chief physician of the medical

sanitary unit [medsanchast] in Krasnodar Kray, suggests setting apart hospitals for surgical profile patients who do not need an operation. This makes it possible for those clinics that specialize in surgical interventions to operate more actively.

A. Abramov, a surgeon with 30 years in the field, relates that forced breaks develop between operations and are not used at all. A. Knyazev, an anesthesiologist-reanimatologist from the eastern uchastok of the Baykal Amur Railway and A. Selivanov, honored physician from the Bashkir ASSR complain: just what should physicians be involved with if not with their basic duty! Our readers write that a physician's work time should be completely given over to patients.

A large argument sprang up over the picture painted by Yu. Krelin: a brigade of surgeons performs an operation in a production line, and physicians specializing in anesthesiology and reanimatology prepare the patients for surgery and observe them after the operation. Thus, in the opinion of the author of the article, it works out better to organize the surgeons' work making it maximally productive and of high quality.

There were many readers who spoke disapprovingly of this. They feel that a surgeon must follow his patient at all stages of recovery. In doing this, a contact develops between them which enhances the responsibility of the former and gives the latter faith that the matter will have a successful outcome. Moreover, having thoroughly studied individual characteristics of the patient's body, the surgeon is able to choose the optimal plan for surgery and followup treatment. S. Chamans, a department chief in a Riga hospital, reminds us of the physical, mental and emotional resources of the surgeon: "Even ten uncomplicated cavity, bone or other operations require at least twelve hours. I personally would not consent to being operated upon toward evening by a surgeon exhausted from nine previous operations, and I myself would be worn down by the waiting."

Yu. Krelin does have supporters, however, who feel that the surgeon can be liberated from constantly watching over patients. In fact, intensification of the work of medical personnel inevitably detects those among them who have little or no direct contact with patients. Many specialists whose work supplements the efforts of the principal treating physicians are already finding themselves in such a position.

Readers are unanimous in feeling that physicians' labor must be evaluated and compensated in some different manner. "Therapeutic work must be based not on quantitative indices (the number of operations) but on the outcome of treatment," writes Professor M. Kamayev from Lvov.

The USSR Ministry of Health also gave its opinion. Deputy Minister A. Safonov reports that PRAVDA has raised an urgent question about the necessity of improving the organization of hospital treatment.

At this time the Ministry of Health is conducting an experiment in a number of hospitals on the more rational use of physicians, medical technology and hospital beds. The intention is that in this manner an increase in the number

of hospitalized patients does not have to lower the quality of their examination and care.

Corresponding polyclinics (departments) are being organized at the bases of medical higher education institutions, scientific and research institutes and major multiprofile hospitals, in order to give highly skilled consultative-diagnostic care under polyclinic conditions. Provision is made in them for diagnosis based on modern methods of research.

On instruction from the USSR Ministry of Health, methods of laboratory microanalysis are now being developed and the means for this are being created. Their use in therapeutic-prophylactic institutions makes it possible to do laboratory studies much more rapidly, and thus with a higher degree of quality.

The ministry has prepared suggestions on increasing the wages of health workers. Taking into consideration that surgeons experience great emotional and physical stress, salaries and supplementary payments for occupational skill are higher for them than for other physicians. It is planned to strengthen the anesthesiology-reanimatology subunits of hospitals.

In his response, A. Safonov did not bypass the idea about maximally concentrating the efforts of surgeons. He writes that the preparation of patients for surgery and their postoperative supervision by surgeons has special significance. As we see, in the argument which blazed in our mail, the ministry does not support Yu. Krelin's suggestion.

It appears that resolution of the argument should be left to health care organization specialists. As was apparent from its response, it is important that the USSR Ministry of Health not only be in agreement that hospital affairs must be significantly improved, but that practical steps must be initiated for the realization of the many suggestions given by PRAVDA readers.

12262

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21 August 1985

AUTOMATION OF EMERGENCY MEDICAL AID MANAGEMENT

Moscow MEDITSINSKAYA GAZETA in Russian 19 Jun 85 p 3

[Article by Balakin, G. [Novosibirsk]]

[Text] A joint plenary session of the USSR Academy of Medical Sciences' Scientific Council on Problems of Emergency Medical Care and First Aid, and of the RSFSR Health Ministry's Scientific Council on "Principles of Medical First Aid" has taken place in Novosibirsk. Scientists from many cities of the country, physicians and public-health organizers discussed questions of the introduction of highly effective methods of medical first aid and resuscitation in medical emergencies.

B. D. Komarov, corresponding member of the USSR Academy of Medical Sciences and chairman of the academy's Scientific Council on Problems of Emergency Medical Care, told our correspondent: "Economic-mathematical methods, computer technology and automated systems are now the principal means of heightening the effectiveness of organization, planning and management in the emergency medical and first-aid service."

Other participants in the plenary session expressed the same thought. Success in correct and efficient use of all resources for emergency medical care can be achieved only with the aid of computers and automation of management processes.

FTD/SNAP

CSO: 1840/1947

21 August 1985

BRIEFS

JOINT USSR-FRG SYMPOSIUM--(LentASS)--Characteristics of the hereditary apparatus of living organisms and the problem of genetic engineering were the main subjects of discussion at the 6th Soviet-West German Symposium which drew to a close yesterday at the Hotel Leningrad. Organized according to a bilateral agreement between the USSR Academy of Sciences and the FRG German Research Society, it was the meeting place for scientists from leading research centers of both countries. While it was in progress, geneticists from the USSR and the FRG reported on results of studies done in both countries and discussed the problems whose solutions will be the main theme of scientific research in the near future. [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 18 May 85 p 3] 12262

REPUBLIC MEDICAL CARE CONFERENCE--(UZTAG)--New methods developed by Uzbekistan scientists for the diagnosis, treatment and prophylaxis of various diseases are being widely adopted in medical practice. This was discussed at the Republic Seminar-Conference On Improving Medical Care To The Population, which opened on May 20 in Tashkent. On the threshold of the 27th CPSU Congress, medical workers are accomplishing a great multiplan work, directed toward the organization of annual dispanserization [preventive medical examination] of the population. In recent years the network of therapeutic and ambulatory institutions has expanded and the quality of medical service has improved. At the same time, participants in the seminar noted that there are still serious shortcomings in this work. Pharmaceutical preparations and medical equipment are not used wisely and effectively everywhere, nor is the training of highly skilled medical personnel going well all over. Participants at the seminar-conference are drafting methods for overcoming existing shortcomings and are familiarizing themselves with the work of the therapeutic-prophylactic institutions of Tashkent and Tashkent Oblast. [Text] [Tashkent PRAVDA VOSTOKA in Russian 21 May 85 p 2] 12262

CSO: 1840/326

21 August 1985

BRIEF

CHILDREN'S HEALTH--(ETA)--The health of society in the year 2000 depends on how healthy our children are today. Measures adopted by our government for mother and child care and for improvement of medical service to young patients were the subject of the 12th Conference of Pediatricians of the Estonian SSR that ended in Tallinn on May 22. In the last five years since the previous forum for medical personnel, the therapeutic-prophylactic care of the young population has improved significantly in the republic. The number of pediatricians has increased. This provides equalization of conditions for obtaining outpatient and inpatient care in cities as well as in rural districts. Pediatric polyclinics in Pyarnu, Kokhtla-Yarve and Akhtme, a pediatric department at the polyclinic in the residential district of Tallinn, Yysmyae, a branch of the pediatric polyclinic in Tartu and a pediatric consultation in Tyuri have been put into operation. In Kharyuskiy and Vilyandiskiy Rayons, new rural outpatient clinics [ambulatoriya] have opened, providing pediatric care. It was reported at the conference that in spite of the successes that have been attained, a number of essential tasks face the pediatric medical service: extensive implementation of tempering and prophylactic measures, organization of closer contact between pediatricians and the obstetrical-gynecological service, and much more. O. Tamm, First Deputy Minister of the Estonian Ministry of Health and I. Grebesheva, chief of the Main Administration Of Therapeutic-Prophylactic Care For Mother And Child of the USSR Ministry of Health spoke at the conference. Medical personnel from the RSFSR, the Ukraine, Belorussia, Uzbekistan, Lithuania, Georgia and Latvia were guests of the conference. [Text] [Tallinn SOVETSKAYA ESTONIYA in Russian 23 May 85 p 1] 12262

CSO: 1840/328

UDC 614.47.003.13:613.95(575.4)

ANALYSIS OF PREVENTIVE VACCINATION FAILURES AMONG CHILDREN IN TURKMENIA

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 11, Nov 84 pp 27-32

MURADOVA, G.D., RUSAKOVA, Ye.V., ALLANAZAROVA, O.Kh. and TUR, T.V.,
Scientific Research Institute of Maternal and Child Health Protection,
Turkmen SSR Ministry of Health

[Abstract] Serologic studies and other determinations of immunity were conducted on 110 children in Ashkhabad to determine the reasons for high levels of infectious disease morbidity, despite the practice of preventive immunization. The data revealed that the immunization schedule recommended and implemented in 1980 was not always followed by the health authorities, and was one of the key factors for the relative ineffectiveness of the program in Ashkhabad. As a result, only 5.5% of the children 1-6 years old were properly immunized against poliomyelitis, 16.4% were properly immunized with the DPT vaccine, and 30.6% against measles. In addition, the high incidence of intercurrent acute upper respiratory infections, particularly during the 2nd year, seriously compromised the immune status and the effectiveness of the vaccines. The general consensus was that only 35.0% of the children possess adequate immunity against measles, while the 1-3 year old group is at particular risk of tetanus and diphtheria. In one year old children, inadequate immunity against diphtheria and tetanus after three immunizations with DPT was evident in 37.9 and 55.1% of the subjects, respectively. Figures 4; references 6: 5 Russian, 1 Western.
[1919-12172]

UDC 614.2:65.012.43

ASSESSMENT OF PROFESSIONAL ACTIVITIES OF HEALTH ADMINISTRATORS AT VARIOUS LEVELS OF MANAGEMENT

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 11, Nov 84 pp 32-35

KOZLITIN, V.M. and BABAYEV, A., All-Union Scientific Research Institute of
Social Hygiene and Public Health Organization imeni N. A. Semashko

[Abstract] Direct interviews were conducted with health administrators at various management levels to assess their professional activities, including

21 August 1985

specialists at the Turkmen SSR Ministry of Health, and heads and other specialists at various medical establishments in Ashkhabad. The study revealed that 66% of the medical administrators were women, and the mean age for the entire group interviewed was in the 40-49 years bracket. However, only 13.3% of the personnel had special qualifications or certification in social hygiene and health administration. The administrators also felt that the information they receive and on which they base their decisions is inadequate in 65.4% of the cases, late (70.0%), or underutilized (50.0%). In monitoring the flow of work and the performance of other personnel they rely largely on written reports, comparisons with results and accomplishments in other situations and establishments, and by on-site inspections. A marked difference was evident--between administrators certified in social hygiene and health administration and those who were not--towards administration professionalism. Of the former, 77.7% felt the need for certification and quality control among administrators, whereas similar feelings were shared by only 46.4% of the latter group. References 7 (Russian).

[I919-12172]

UDC 616-036.865(575.4)

PRIMARY DISABILITY AMONG WORKERS AND SERVICE PERSONNEL IN TURKMEN SSR IN 1981-1982

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 11, Nov 84 pp 36-38

KURBANOVA, A.K. and ATAYEV, K.A., Chair of Social Hygiene and Organization of Public Health, Therapeutics Faculty, Turkmen Order of People's Friendship State Medical Institute

[Abstract] An analysis was conducted on the structure of primary disability in Turkmenia in 1981-1982, which demonstrated that cardiovascular diseases were the primary reasons for disability in both years (24.5 and 24.1%, respectively). Next in importance were traumatic injuries, 15.0% in 1981 and 16.7% in 1982. In 1982 disability due to neoplastic processes decreased by 1.7% in comparison with the previous year on an overall basis, but showed a 3% increase among the younger cohort (29 years or younger). These observations indicate the need for more in-depth studies of these problems, in order to institute appropriate preventive and rehabilitative measures. References 5 (Russian).

[I919-12172]

ETIOLOGY AND PATHOGENESIS OF INTRAUTERINE BACTERIAL DISEASES

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 8, Aug 84 pp 39-44

KHANAMOVA, T.A., Scientific Research Institute of Maternal and Child Health Protection, Turkmen SSR Ministry of Health

[Abstract] This is a review article of studies on the etiology and pathogenesis of intrauterine bacterial infections, which have been estimated to account for 5-25% of perinatal mortality, and for 2-16.7% of neonatal mortality. The review points out that in many cases normal bacterial flora constitutes the pathogenic agent, and that various mechanisms of spread (hematogenous, ascending descending, transdecidual, mixed) may be involved. Most infections appear to be due to Gram-negative bacteria, and the source is usually an infectious or pyogenic focus in the maternal body. However, the review concludes with the assertion that much remains unknown about the exact mechanism that gives rise to an intrauterine infection, and that what has been established is subject to various interpretations and, hence, controversy. In view of this, the problems of intrauterine infections continue to present a clinical and a research challenge. References 40: 18 Russian, 28 Western.
[I916-1217Z]

COST ANALYSIS OF THERAPEUTIC AND DIAGNOSTIC SERVICES AT POLYCLINICS

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 7, Jul 84 pp 34-37

SNEGUR, Ye.A., KOSTRITSA, T.B. and ZADOROZHNYI, V.F., Kiev Scientific Research Institute of General and Communal Hygiene; Kiev Institute of National Economy

[Abstract] A cost analysis was conducted on the therapeutic and diagnostic services of 24 polyclinics in Kiev for the 3 year period 1979-1981, in light of the decisions and rulings of the 26th Party Congress and the November 1982 and December 1983 Plenums of the CC CPSU that health care delivery must be based on rational utilization of financial, personnel and material resources. Evaluation of the different services (laboratory diagnosis, physical therapy, function tests, etc.) revealed considerable spread in cost per procedure per patient from clinic to clinic. For example, the cost of radiodiagnosis ranged from a minimum of 0.70 rubles to a maximum of 1.50 rubles, and physical therapy from 0.20 to 0.6 rubles. In general, streamlining admission procedures, improving scheduling of patients, adjusting clinic hours, and so forth, usually led to more cost efficient operations. It is evident that implementation of more professional administrative measures should contribute significantly to improving health care finances. References 3 (Russian).
[I915-1217Z]

UDC 614.211:614.2(-22):301.085(-22).(478)

PUBLIC OPINION AND ITS ROLE IN IMPROVING FUTURE HOSPITAL SERVICE TO RURAL POPULATION

Kishinev ZDRAVOOKHRANENIYE in Russian No 1, Jan-Feb 85 (manuscript received 23 Mar 84) pp 45-47

SPINEY, F. D., I Department of Social Hygiene and Organization of Public Health, Kishinev Medical Institute

[Abstract] Rural public opinion about satisfaction with inpatient care received at central district hospitals was studied by administering a questionnaire to 2864 hospital patients. The question "does your health bother you now?" was answered affirmatively by 97.6% of the subjects, indicating that the opinions collected were based on real experience. More than a third (36.9%) of the respondents had been treated at a rural Uchastok hospital; 10% at a numbered rayon hospital; 27.6% at a central rayon hospital; 9.8% at a city hospital; 10.2% at a republic oblast hospital. Only 5.5% of the patients were first treated at a central rayon hospital. In 80% of the cases, the respondents were satisfied with treatments received. The 5.6% who were dissatisfied cited delayed hospitalization, inadequate specialist consultations in connection with complications and inopportune diagnoses. Poor care or food, or inattentive staff, were mentioned by 0.6% of the unsatisfied patients. In 73.9% of the cases, the respondents would choose future care in the central district hospital. The satisfied respondents cited attentive personnel, qualified treatment and good care. The largest percent of unsatisfied patients (10.2-13.4%) were treated at hospitals with inadequate material resources. Most of the dissatisfied respondents were above 40 years old, with negative responses increasing with age. Patients with ulcers or chronic pneumonia were most likely to be dissatisfied.

[1898-12126]

PEDIATRIC ASSISTANCE

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 1 Jan 85 p 3

GRIGOR'YEVA, T., Alma-Ata

[Abstract] The claim is made that, in contrast to the Western countries, the USSR pays a lot of attention to children's health. A network of treatment-prophylactic centers has been established in the Kazak Republic: 752 polyclinics, 13 oblast hospitals, and 55 city hospitals. Milk kitchens were doubled during the last five-year-plan to reach 1040. About 7,000 pediatricians serve these children. The Institute of Pediatrics of the KSSR Ministry of Health moved to a newly constructed facility, and even though its official address has not yet been revealed, several divisions are fully operational. Some of the upcoming innovations which will soon be available are: artificial kidney machine, radioisotope technology and biochemical microanalyzers. Technical expertise is on the increase. Five doctors of

sciences and 30 candidates of medical sciences are currently employed in the institution. Figures 3.

[327-7813]

UNSATISFACTORY STATUS OF HEALTH OF PRESCHOOL CHILDREN

Moscow IZVESTIYA in Russian 22 May 85 p 2

IVCHENKO, L.

[Abstract] The Collegium of the USSR Ministry of Health has initiated an effort to lower sickness of children in kindergartens and creches. In this connection, an interview was conducted by Ivchenko with the Director of the Main Administration of Therapeutic-Prophylactic Service to Mothers and Children, USSR Ministry of Health, I. G. Grebeshev. Attention is being directed to physical fitness measures and to improved feeding of diets to children which are rich in protein and low in carbohydrates, supplemented by fruits and vegetables. In spite of an increased number of health facilities, the children continue to be sick. Children have, evidently not been uniformly examined across the board as required. Some incentives were proposed to increase the alertness of supervisors, teachers and health personnel.

[340-7813]

100TH ANNIVERSARY OF LENINGRAD STATE INSTITUTE FOR ADVANCED TRAINING OF PHYSICIANS

Leningrad LENINGRADSKAYA PRAVDA in Russian 2 Jun 85 p 2

CHESANOVA, T.

[Abstract] The article surveys the work of the Leningrad State Institute for Advanced Training of Physicians imeni S. M. Kirov, which is celebrating its 100th anniversary. The Institute has 60 departments offering work in 75 specialties. Among the topics discussed are neonate research into the need for almost immediate nursing to obtain antibodies in mother's first milk, the indications of large neonates (ca 4 kg) that diabetes in mother or child is possible, on-the-job questionnaires to catch early signs of potentially dangerous ailments and thus provide early prophylactic treatment, e.g., for ulcers, and other outpatient treatment that will prevent the need for hospitalization and lost work-time. The functioning of an artificial lung offering both oxygen and purification of air over a period of several days is highlighted. Preparation of both physicians and technicians to service and repair modern medical equipment is noted for both hospitals and emergency aid services.

[338-12131]

HEALTH CARE, AN ECONOMIC FORESHORTENING

JPRS-UBB-85-022
21 August 1985

Tashkent EKONIMIA I ZHIZN' in Russian No 3, 1985

UMURZAKOV, B., Chief of Planning and Finances, Health Ministry, UzSSR

[Abstract] The author notes that more than one quarter of the republic budget is going for health services, and many new facilities have been constructed. Yet the extensive health care facilities have not been implemented properly to provide intensive personal health care. The article stresses the need for coordinated development and careful supervision to see that facilities are built properly and personnel trained to use equipment so as to avoid early need for repair and frequent equipment breakdowns. Currently practically new facilities require extensive renovation almost immediately. Despite the latest in equipment, its benefits are often not available since it cannot even be assembled properly (as occurred with a 120,000 ruble X-ray system in a factory clinic). Needs and available personnel for operation must be considered before sophisticated equipment is purchased. Another problem has been in engineering shortcomings in medical facilities, with inoperative elevators and medical gas supply systems. Operational budgets for hospitals and clinics have grown rapidly, often at the expense of medications and nutrition of the patients. The author calls for more support and cooperation by non-medical enterprises to avoid bottlenecks and supply-failure, etc. Finally, the need for family practice physicians to take the pressure off emergency medical services is underlined.

[339-1213]

INTEGRATION FOR HEALTH SERVICES

Moscow EKONOMICHESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV in Russian No 4, 1985
pp 61-63

VARGA, Edit, Director, "Gedeon Richter" Chemical Plant (Hungary)

[Abstract] The article summarizes multi-lateral and bilateral collaboration between CMEA countries, with particular emphasis on the pharmaceutical products of Hungary and the author's plant, 75% of whose products are exported to the USSR. The plant's production has increased 11-fold since 1964, with only 1.7 times as many employees. Among 140 types of medications produced from CMEA distribution in Hungary, 27 are produced entirely at the plant, including "arduan", "kavinton", "deperzolon", "midokalm", "tobanum" and "ziksorin", which were originated there. The author cites as advantageous recent decreases in the number of pharmaceuticals imported from the West, and the cooperation both in producing and in refraining from producing that it and other plants contribute to the economic bloc. Currently, research collaboration is essentially limited to ascertaining that no duplicate research is being carried on, but hopes for more positive cooperation are expressed. Progress in standardization of products among the bloc countries is noted for 250 substances, and a "Compendium Medicamentorum" has been prepared. Penetration into markets of developing countries has not been sufficient, and other shortcomings include

failure to develop good bilateral agreements that would help CMEA countries compete with capitalist countries for markets. Other problems are the preponderance of Hungarian pharmaceutical trade agreements with Poland and the Soviet Union, while few are in effect with the GDR or Romania, and inefficient production of medications in a single country where another might be more efficient. The plant's cooperative agreements with the GDR, e. g., for digitalis growth and processing, is growing, along with scientific study of new compounds.

[336-12131]

UDC 362.7(47+57)

ROLE OF SOCIETY IN CHILD HEALTH CARE

Moscow SOVETSKAYA MEDITSINA in Russian No 1, Jan 85 (manuscript received 15 Nov 83) pp 61-65

TYULYANDIN, A.D., candidate of medical sciences, Moscow

[Abstract] An analysis is presented of social attitudes and social role in child health care in the RSFSR, including a review of the important contribution made by the Red Cross & Red Crescent Society in raising public consciousness. One fact that has become clear is that no matter how many physicians and other medical workers are engaged in public health education, they would be able to accomplish little without the dedication and knowledge of Red Cross workers. In the RSFSR some 92,000 Red Cross activists have received special training in child health care, and they are ably assisted by some 21 senior komsomol workers. Of the latter category, 12,000 are to be found in rural areas. While considerable progress has been made in the RSFSR in improving child health services and decreasing pediatric mortality, the full potential of the Red Cross is basically underutilized. In many cases this is due to lethargy on the part of local Red Cross committees themselves, and on the other hand to disdain for such workers on the part of physicians and other medical personnel.

[353-12172]

UDC 616-084.3:681.32

COMPUTERIZED DATA PROCESSING IN PERIODIC HEALTH EXAMINATIONS

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 4, Apr 85 (manuscript received 26 Oct 84) pp 15-19

KANT, V.I., professor, Central Institute for the Advanced Training of Physicians, Moscow

[Abstract] Implementation of dispensarization in the USSR, i.e., compulsory, periodic, preventive medical examination of all the population has made it

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necessary to implement computer-based data processing, both at the local level to monitor case loads and at national level to control overall progress. The use of such systems, whether relying on microprocessors of the Iskra type or on mainframe computers of the SM-4 type, allows for a more rational distribution of resources, location of hospitals and clinics, and prediction of health status indicators and morbidity patterns. Such extensive utilization of computer technology in Soviet health care creates new demands for highly skilled data management specialists and programmers to complement the medical and paramedical personnel. References 2 (Russian).

[355-12172]

UDC 614.1:[312.2+313.13]-053.9:616-084.3

HEALTH STATUS, MORBIDITY AND MORTALITY TRENDS IN OLD AND VERY OLD AGE GROUPS REVEALED BY PERIODIC HEALTH EXAMINATIONS

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 4, Apr 85 (manuscript received 30 Jul 84) pp 36-39

USHAKOV, G.N. and MELENT'YEV, A.S., Moscow

[Abstract] Analysis of patient data at a large polyclinic for old and very old age groups for the period 1970 to 1983 showed an increase in the 50-59 and 70 plus groups of 2.5 and 9.6%, respectively, a decrease in those below 39 years and in the 40-49 year bracket of 5.9 and 4.8%, respectively, and a 1.1% increase in the 60-69 year old patient group. Coronary heart disease was diagnosed most frequently in the 50-59 year group, while the incidence of myocardial infarction was 2.3-fold greater in the 60-69 group and 4.1-fold greater in the 70+ group than in the 50-59 year group. The incidence of stroke showed an overall decrease in comparison with the previous decade, but was 1.8- to 3.9-fold greater in the older groups than in the middle aged group. Clinical stability was secured in 80% of the subjects in the old and very old categories. Analysis of trends in morbidity patterns in relation to age constitutes one of the key parameters in planning health services for the future, and represents one of the major benefits that derive from periodic health examinations. References 2 (Russian).

[355-12172]

UDC 614.2.007 (470)

SELECTION AND PREPARATION OF MANAGERS FOR RSFSR PUBLIC HEALTH AFFAIRS

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 4, Apr 85 (manuscript received 10 Jan 85) pp 8-12

CHIKIN, S. Ya., deputy minister of Health RSFSR

[Abstract] The progress of all branches of national economy depends principally on management cadres, primarily those connected with the Party. In the

RSFSR, there are currently 614,900 physicians and 1,682,900 mid-range medical personnel. The numbers of various degrees of achievement among these persons were listed. The management plays an important role in achieving the goals set by the Party. These managers should be professional in their technical fields as well as in legal, economic and party principles. They should give personal example to everybody by their business and moral behavior. Technical expertise appears to be on a satisfactory level. The problem is in selecting the reliable candidates for such assignments. To do this, a reserve pool must be organized for the purpose of preselection and try-outs. Even before entering the reserve pool, a candidate should be screened for reliability.

[341-7813]

UDC 613.95 + 362.7

LIFE STYLE AND HEALTH OF CHILDREN AND ADOLESCENTS

Moscow ZDRAVOOKHRANENIYE ROSSIYSKOY FEDERATSII in Russian No 4, Apr 85
(manuscript received 1 Jul 84) pp 21-23

SOKOLOV, V. D., Chelyabinsk Medical Institute

[Abstract] During the 1980-1982 period, the life style effect on their health was studied in 3,000 children and adolescents of Chelyabinsk. It was established that the following elements had a direct effect on childrens' health: hardening, physical stress and adequate physical activity. No real connection was found between physical development and their progress in academic requirements. At the same time, it was established that parallel development of musical, artistic choreographic and sport activities added to the overall development of a child, improving its health status. Among the more important factors were: the relationship to their families, to their peers, nutritional and household aspects, rest periods and overall cultural activities. Specific residence characteristics were among the more influential behavior determinants. The density of individuals per living quarter of space allocation had a definite effect, growing more detrimental with lesser square footage per individual. Participation in sports and active health support activities had an obvious positive effect on the overall health status.

[341-7813]

RELIABLE PROPHYLAXIS AGAINST INTESTINAL INFECTIONS

Baku VYSHKA in Russian 2 Jun 85 p 3

BABAYEV, F., deputy chief state sanitary physician, Azerbaijan SSR

[Abstract] With the coming of summer and the availability of fresh fruits and vegetables in the markets the danger of outbreaks of intestinal infections are increasing. Consequently, it is imperative that the people be reminded to

wash such products with boiled water, and adhere to sanitary norms and practices at home and at work. Among the most troublesome infections are typhoid fever, paratyphus A and B, dysentery, enteritis. It is also the duty of the sanitation workers and those concerned with water treatment to insure that the water supplies in Baku are safe, particularly in connection with the recent failures at the treatment facility. Prevention is the best medicine, and is most effective when all factors predisposing to a disease are eliminated or controlled. Thus, the use of boiled water for personal hygiene and for washing food, in combination with food inspection and quality control and chlorination of water would go a long way to eliminating the annual summer outbreaks of enteric infections, many of which are due to laxity in communal hygiene and contamination of water supplies. For those unfortunate enough to contact an enteric infection, effective specific and nonspecific therapies are available. Such patients are discharged only after a full course of treatment to ensure that they do not present a risk factor as carriers.

[I920-12172]

UDC 617.7-089-362.14(575.4-202)

BRIGADE APPROACH TO OPHTHALMIC SURGERY IN RURAL AREAS OF TURKMEN SSR

Ashkhabad ZDRAVOOKHRANENIYE TURKMENISTANA in Russian No 9, Sep 84 pp 27-28

KHAKKIYEV, R.Kh., MAKSIMENKO, A.N., TSERETELI, E.K., AMANSAKHATOV, Sh. A., MINTS, S.S., NURMUKHAMEDOV A.Ch. and BERENOV, S.N., Turkmen Scientific Research Institute of Eye Diseases

[Abstract] Mobile surgical teams consisting of an ophthalmic surgeon and an assistant were organized for conducting eye surgery in rural regions of Turkmen SSR. Assignments were organized in such a manner that two and one surgical nurse would work together continuously for 7-10 days. Prior to brigade arrival, the local oculist would select and psychologically prepare candidates for surgery. Two to three days before the arrival of the surgical team, an ophthalmologist and a bacteriologist would examine the selected patients for suitability. The vast majority of the procedures performed on this out-patient basis consisted of cataract extraction, trabeculectomy, pterygium resection, removal of neoplasms, dacryocystorhinostomies, etc. Although the incidence of complications was slightly higher than after operations performed in ophthalmic hospitals, such an approach to ophthalmic care of the rural population appears to be an efficient and rational means of expanding surgical eye care.

[I917-12172]

Moscow IZVESTIYA in Russian 24 May 85 p 3

KAZIKHANOV, A., Izvestiya correspondent, Ordzhonikidze-Makhachkala-Groznyy

[Abstract] A survey of hospitals in three autonomous republics -- North Ossetia, Chechen-Ingushia and Dagestan -- has shown that Soviet medical equipment leaves much to be desired. The complaints from physicians, nurses, orderlies and patients are about ordinary medical instruments and equipment that either do not work or are unreliable. These complaints encompass, it seems, just about everything: hypodermic syringes and needles that crumble and fall apart, wheelchairs that take two or more people to push, intensive care monitoring equipment that fails as a matter of routine, adjustable beds that can't be adjusted, 'modernized' thermometers and sphygmomanometers that are inaccurate and fail to operate because of poor construction and/or unavailability of batteries. In attempting to deal with the root causes of the problems one encounters evasiveness and denials from the various department and ministries concerned with medical instrumentation, with each one attempting to shift the blame on someone else. One thing is clear, the breakdown in quality occurs after some instrument or piece of medical equipment has been tested and approved for wide usage; it is at the stage of mass production that quality control appears to collapse. The welfare of the Soviet people demands that the same standards of quality control be applied to mass-produced articles as to individual prototypes.

[I913-12172]

MEDICAL CARE OF PATIENT AS INDIVIDUAL PERSON

Moscow IZVESTIYA in Russian 30 May 85 p 3

KHROMCHENKO, M.

[Abstract] An interview with Ye.M. Tareyev, a 1917 graduate of the then Faculty of Medicine of Moscow University and a widely recognized medical educator and teacher of many leading Soviet physicians and medical scientists, revealed some of his inner thoughts and concerns about current medicine. Ye. M. Tareyev feels the need for a holistic and integral approach to medicine in the training of new physicians, and decries the lack of effective patient contact during the first three years of the medical curriculum. Knowledge acquired from lectures and textbooks in no way prepares the future physician for face-to-face contact with a patient and assessment of clinical status. In addition, an added area of Tareyev's concern is too early specialization which imparts a narrow focus that, in the long run, cannot be of optimal benefit to the patient. Tareyev urges a more reflective approach both to medical education and the practice of medicine that keeps the whole patient and his environment in mind when approaching a clinical case.

[I912-12172]

PSYCHOLOGY

EXECUTION OF COMPLEX PSYCHOLOGICAL STUDY METHODS ON 'TSENTR-MT' APPARATUS

Moscow PSIKHOLOGICHESKIY ZHURNAL in Russian Vol 6, No 2, Mar-Apr 85 p 118

KORSHUNOV, Yu. G. and YAKOVLEVA, N. V.

[Abstract] The Association "Soyuzmedtekhnik" has begun serial production of "Tsentri-MT", a combination of apparatus units for psychophysiological studies, capable of determining the reaction time to light, sound and situation stimuli. In addition to uses of it reported in the technical pamphlets, the following two applications were evaluated: instrumental determination of typological characteristics of higher nervous activity of man and evaluation of the activity and functioning of human operators. Detailed information may be obtained by writing to the address: VNIIFTRI, 113114, Moscow, Paveletskaya nab., 6, OMM.

[347-7813]

SYSTEMS APPROACH TO CLASSIFICATION OF MENTAL IMAGERY

Moscow VOPROSY PSIKHOLOGII in Russian No 1, Jan-Feb 85 (manuscript received 23 Jul 84) pp 33-42

GOSTEV, A. A. and RUBAKHIN, V.F. (deceased), Institute of Psychology, USSR Academy of Sciences, Moscow

[Abstract] A systems approach is proposed for the analysis and classification of mental imagery, using the standard techniques of taking the different types of images as components of a dynamic mental representation system underlying and constituting imagination, memory and introspection. The essential steps are the construction of mathematical models and their analysis, with application of the end results to this particular area of cognitive psychology. Analysis of the various components of mental representation into operative imagery, voluntary and involuntary imagery, persevering imagery, and so forth would facilitate an understanding of their respective functions in the regulation of human behavior. A quantitative classification scheme would also have practical applications in assessment of job and career fitness and personality traits. References 26: 23 Russian, 3 Western.

[I928-121721]

21 August 1985

MULTIDIMENSIONAL SCALING OF SYMBOL CONFIGURATIONS

Moscow VOPROSY PSIKHOLOGII in Russian No 1, Jan-Feb 85 (manuscript received 21 Oct 84) pp 133-140

SOKOLOV, Ye. N., IZMAYLOV, Ch.A. and ZAVGORODNYAYA*, V.L., Faculty of Psychology, Moscow State University imeni M. V. Lomonosov; *engineering psychologist, Fryazino

[Abstract] Differentiation of various symbol configurations was studied on the basis of multidimensional scaling, using as symbols letters of the Cyrillic alphabet, Arabic numbers, and letter-like angular symbols resembling optical recognition characters. The study was conducted with 18-30 year old males and females with normal color and stereoscopic vision to determine the minimum number of features necessary for human differentiation of the test symbols. Differentiation was found to be based on three key features: a) size of angles between linear components of the symbols, b) the total number of closed configurations per symbol, and c) the total number of angular configurations per symbol. The data was interpreted to imply that the human visual system, for the purpose of symbol discrimination, can be described by a bilayer model. The model is constructed of neuron-like elements forming one layer of three types of predetectors of configurational features, with the second layer consisting of selective detectors of symbols which receive input from the orientation detectors. Figures 4; references 15: 9 Russian, 6 Western. [I928-12172]

RADIATION BIOLOGY

UDC 577.152.314:577.346

ISOLATION AND PROPERTIES OF TWO FORMS OF PHOSPHODIESTERASES OF CYCLIC NUCLEOTIDES FROM RAT BRAIN IN NORMA AND UNDER IRRADIATION

Kiev UKRAINSKIY BIOKHMICHESKIY ZHURNAL in Russian Vol 57, No 3, May-Jun 85
(manuscript received 22 Jun 84) pp 31-35

PARKHOMETS, T.I., VASIL'YEV, A.N., CHERNEN'KAYA, S.N. and KUCHERENKO, N.Ye.,
Kiev University imeni T.G. Shevchenko

[Abstract] An attempt to isolate 2 forms of phosphodiesterase: I (Ca^{2+} -calmodulin-sensitive) and II (Ca^{2+} -calmodulin-insensitive) from brain grey matter of intact and irradiated white mongrel rats of both sexes (150-200 g) on standard rations in a vivarium was described and discussed. Two forms of phosphodiesterase of cyclic nucleotides were obtained by use of column chromatography of brain grey matter of intact and irradiated rats (one hour after total irradiation by a 0.21 kl/kg dose). Functional activity of the 2 forms of phosphodiesterase isolated from irradiated rat brain differs greatly from that from unirradiated rat brain. In the early period of acute radiation injury, phosphodiesterase I sensitivity to calmodulin is reduced while the specific activity of phosphodiesterase II is reduced upon 3', 5'-AMP hydrolysis and the specific activity phosphodiesterase II activity increases upon 3', 5'-GMPP hydrolysis. Study of the temperature dependence of phosphodiesterase I and II showed changes of the temperature curves but the temperature optimum under irradiation remained unchanged and inflections appear on the Arrhenius curves. The absence of change of the phosphodiesterase activity of the cyclic nucleotides after whole-body irradiation of the animals (dose 0.21 kl/kg) was assumed to be due to structural changes in molecules of the enzymic protein. Figures 3; references 16: 7 Russian, 9 Western.

[1840-2791]

CONFERENCES

BRIEF

NEUROLOGICAL CONFERENCE--Bakuriani, 4 Mar--The Second All-Union Conference on the Nervous System began in this city today. This year's conference is dedicated to the 100th anniversary of the birth of the famous Soviet physiologist I.S. Beritashvili. It was organized by Tbilisi University and the Georgian Physiological Society. In the conference hall of the university teaching and training, there were gathered the leading Soviet neurophysiologists, neuromorphologists, neuropharmacologists, neurosurgeons, neuropsychologists, neurochemists, neuropathologists and neuroimmunologists and representatives of all sciences involved in the study of the brain. For four days, the conference participants will discuss problems concerning the finer mechanisms of the activities of nerve cells in the brain, sleep and consciousness and current problems facing neurosurgery and neurology. Many reports to be read are dedicated to the study of the neurophysiological mechanisms of memory, the use of computers for the study of man's sense of hearing and vestibular function and the modelling of structures responsible for conducting nerve impulses, etc. At the first plenary session, Tbilisi University Rector and member of the Georgian Academy of Sciences V. Okudzhava read a report titled "The creative work of I.S. Beritashvili and modern neurological sciences". Dedicated to current problems of the study of the brain were reports by secretary of the Physiology Division of the USSR Academy of Sciences P. Kostyuk, director of the Palladin Institute of Biochemistry of the Ukrainian Academy of Sciences V. Lishko, senior scientific colleague of the Institute of Physiology of the Ukrainian Academy of Sciences P. Doroshenko and others. As the chairman of the conferences organizing committee, V. Okudzhava, told us: "Regardless of all of the new discoveries, the brain still remains an esoteric realm of science. It constantly poses difficult problems that can no longer be solved by neurophysiologists alone. We are now helped by biochemists and biophysicists, mathematicians, histologists and even linguists. Their efforts are necessary to coordinate and work out general concepts even though each of these sciences has its own specific language. It has therefore become necessary for everyone to meet regularly to exchange new ideas and present difficult problems. The preceding conference in Bakuriani showed that the representatives of various disciplines were able to reach full mutual understanding in the overwhelming majority of problems. The conference made it possible to create informal and lively associations between scientists and this in turn led to success. This makes us confident that new mysteries of the brain will be solved and this means that there will be found new and effective ways to control various human diseases". [By special GruzINFORM correspondent] [Text] [Tbilisi ZARYA VOSTOKA in Russian 5 Mar 85 p 3] 12261

CSO: 1840/295

UDC 612.6.05:061.3(47+57)"1984"

PROCEEDINGS OF FIRST ALL-UNION CONFERENCE OF MEDICAL GENETICISTS

Moscow SOVETSKAYA MEDITSINA in Russian No 1, Jan 85 (manuscript received)
pp 102-104)

GEMBITSKAYA, T. Ye., Leningrad

[Abstract] The First All-Union Conference of Medical Geneticists was held in Kiev on April 16-18, 1984. The meeting was organized by the USSR Ministry of Health, the All-Union Scientific Society of Medical Geneticists, and the Ukrainian SSR Ministry of Health. The meeting was attended by more than 350 delegates from the USSR, the socialist countries, and certain capitalist countries. The meeting was opened with an address by O.P. Shchepin, Deputy Minister, USSR Ministry of Health, who outlined the problems of medical genetics in preventive medicine and noted that heritable diseases currently account for the occupancy of 20% of the beds in pediatric hospitals. Other speakers dealt with problems of providing genetic diagnostic and counseling services, various treatment modalities, and advances in medical genetics as a science. The conference concluded with a call for improvements in the teaching of medical genetics in the medical undergraduate and graduate programs, and for establishing closer ties between the Society and the rest of the medical establishment.

[353-12172]

UDC 613.8+616.847:061.3(571.1/.5)"1983"

FIRST SCIENTIFIC SESSION OF SIBERIAN BRANCH OF ALL-UNION SCIENTIFIC MEDICAL
HEALTH CENTER OF USSR ACADEMY OF MEDICAL SCIENCES

Moscow ZHURNAL NEVROPATOLOGII I PSIKHIATRII in Russian Vol 84, No 12, Dec 84
pp 1879-1880

POLOZHIY, B.S. and SHEMETOVA, L.Ya., Tomsk

[Abstract] The First Scientific Session of the Siberian Branch of the All-Union Scientific Mental Health Center was held in Tomsk on November 1-2, 1983, and was dedicated to the 75h Anniversary of the founding of the Tomsk

Psychiatric Hospital. The meeting consisted of three plenary sessions and 5 poster exhibitions, and encompassed some 60 reports. The first plenary session concentrated on administrative and epidemiologic aspects of psychiatry. The second plenary session dealt with problems encountered in clinical practice and in rehabilitation, while the third plenary session addressed biological research in psychiatry. Participants in the conference were highly impressed with the quality of the research done at the Siberian Branch of the Center, particularly at the implementation of research findings in clinical practice.
[359-12172]

THIRD ALL-UNION SYMPOSIUM ON STRESS

Kishinev IZVESTIYA AKADEMII NAUK MOLDAVSKOY SSR: SERIYA BIOLOGICHESKIKH I KHIMICHESKIKH NAUK in Russian No 2, Mar-Apr 85 pp 72-74

FURDUY, F.I., KHAYDARLIU, S.Kh., SHTIRBU, Ye.I., MITYUSHOV, M.I. and NOZDRACHEV, A.D.

[Abstract] The 3rd All-Union Symposium on Stress was held on 13-14 June 1984 in Kishinev. The conference was organized by the Institute of Zoology and Physiology of the Moldavian SSR Academy of Sciences, the USSR Ministry of Health and the USSR Academy of Medical Sciences. This particular conference emphasized the physiological and biochemical factors underlying stress, adaptation and functional perturbations, analysis of physiological responsiveness to stress, methods of enhancing stress resistance, and prevention and treatment of stress-induced pathology. One session dealt with the effects of stress on farm animals that are related to agricultural automation. Stress-related hypokinesia, artificial illumination and confinement within barns has been shown to have a negative effect on productive and reproductive characteristics. Note was taken of measures that should be taken to minimize and avoid such complications in animal husbandry.
[I934-12172]

MISCELLANEOUS

JPRS-UBB-85-022
21 August 1985

SOVIET-FRENCH GROUP PLANS COOPERATION IN SPACE CYTOLOGY

Moscow MEDITSINSKAYA GAZETA in Russian 17 May 85 p 3

[Article by Demyankova, I.]

[Excerpt] The 15th session of the mixed Soviet-French working group on medicine and medical technology has completed its work. Coordinators of the two countries discussed results and prospects of cooperation which is being pursued in line with an intergovernmental agreement. Cooperation is now in progress on 11 problems: medical genetics, biology and pathology of cells, surgical methods of treatment and transplantation, rheumatic diseases, malignant tumors, microbiology and virology, medicines, medical technology, public health organization and planning, cardiology, and pulmonology.

The sides agreed to pursue cooperation on two new high-priority problems in 1985: "Pathogenesis of Atherosclerosis" and "A Cytometry System in Space Cytology".

FTD/SNAP

CSO: 1840/1947

HOTHOUSES FOR GROWING VEGETABLES ON SHIPS

Moscow NTR: PROBLEMY I RESHENIYA in Russian No 9, 30 Apr-13 May 85 p 3

Text A special-topic group called "Oranzhereya" (hothouse) is working at the Institute of Experimental Botany imeni Kuprevich. The economic effect from developments proposed by the group and introduced in the economy was 670,000 rubles last year alone. One of these developments was the "SUVORA" unit, which is intended for growing vegetables on seagoing vessels. It was developed to fulfill orders of the Murmansk Shipping Line. With this unit, the crew of the icebreaker "Krasin" and winter teams of explorers in the Arctic are growing lettuce, onions, tomatoes, sweet peppers, radishes, parsley and dill. Operation of another of the units began last year on the nuclear-powered vessel "Leonid Brezhnev". A pretty good crop has been harvested from the new polar 'kitchen garden.' Specifications and drawings for the unit were produced by the Central Design Bureau of the Belorussian Academy of Sciences.

FTD/SNAP
CSO: 1840/334

END